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STUDIES OF CENTRAL AMERICAN PLANTS—III

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Most of the new species described on the following pages were collected by the authors during recent exploration in Guatemala, and are published here preparatory to their inclusion in the descriptive *Flora of Guatemala*, whose preparation is now well advanced. Because of present economic conditions, the descriptions and discussions of these new plants have been somewhat abbreviated but they will be extended, if deemed necessary, when treated in that work.

PINACEAE

***Juniperus Standleyi* Steyermark, sp. nov.**—Frutex prostratus vel depresso vel erectus, ramulis ultimis numerosis brevibus densis confertis 1.1–1.4 mm. crassis 5–20 mm. longis; folia adulta ovata vel ovato-rotundata cucullata, apice obtusa vel rotundata, 1.5–1.7 mm. longa, basi 0.8–1 mm. lata, medio depressa, dorso glandulosa, marginibus crassis incurvis minute erosis vel subintegris; folia juvenilia lanceolata subulata acuminata 4–5 mm. longa; bacca coerulescens 7–9 mm. diam., pedicello brevi recurvo pendulo; semina 3–4.—Guatemala: Dept. San Marcos: Upper slopes of Volcán de Tacaná, alt. 4,100–4,400 meters, February, 1940, Julian A. Steyermark 36137 (type in Herb. Field Mus.). Collected at various localities in the departments of San Marcos and Huehuetenango, and extending into Chiapas, Mexico.

This has been confused with *J. mexicana* Spreng., also native in Guatemala, which is a tall or medium-sized tree with 1–2-seeded fruit.

ARACEAE

***Philodendron Rojasianum* Standl. & Steyermark, sp. nov.**—Subgenus *Euphilodendron*, Sect. *Pteromischum*. Epiphytica scandens, ramulorum internodiis superioribus ca. 4 cm. longis et 8 mm. crassis; petiolus ca. 16 cm. longus crassus, vagina ca. 1 cm. lata foliacea persistente ca. 1–2 cm. infra apicem soluta atque ca. 1.5 cm. longe protracta, apice obtusissima; lamina tenuiter coriacea rigidula late oblongo-ovata ca. 21 cm. longa et 11–13.5 cm. lata, apice obtusa vel subrotundata et breviter cuspidato-acuminata, basi lata breviter lateque cordata, nervis primariis utroque latere ca. 10 angulo

latissimo abeuntibus tenuibus quam secundariis et tertiaris solemniter crassioribus; pedunculus crassus vix ultra 1.5 cm. longus; spatha oblongo-linearis ca. 14 cm. longa prope basin 2 cm. lata viridis, spadice viridi.—Guatemala: Climbing on tree along a small stream, Finca Pirineos, lower southern slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, Dept. Quezaltenango, alt. 1,300–1,500 meters, December, 1939, Julian A. Steyermark 33244 (type in Herb. Field Mus.).

This may be only an extreme form of *P. guttiferum* Kunth, but in that the petioles usually are relatively shorter and the ligule of the petiole sheath much less developed. Also related is *P. rigidifolium* Krause of Panama, but that also has a less developed petiole sheath. The ligule of the sheath in *P. Rojasianum* is sometimes as much as 2.5 cm. long. The new species is named for Professor Ulises Rojas, Director of the Jardín Botánico de Guatemala.

AMARYLLIDACEAE

Agave huehuetea Standl. & Steyermark, sp. nov.—Subgenus *Littaea*. Folia numerosa rosulata oblongo-ovata vel obovata ca. 35 cm. longa atque 10 cm. lata, vel minora majorave, suberecta vel adscendentia, subincurva, plus minusve concava, laevia, crassa, fibrosa, griseo-viridia vel glaucescentia, rigida; spina terminalis conica vel elongato-conica 2.5–4 cm. longa basi ca. 6 mm. crassa griseo-brunnea, interdum lucida, superne teres, inferne late sulcata; margin folii late corneo-incrassatus griseus, dentibus plerumque 5–11 mm. longis complanatis griseis latissimis saepe curvis vel recurvis; inflorescentia 3–5-metralis simplex spicata erecta, spica densa elongata, bracteis numerosis, superioribus e basi lata fere setaceis elongatis, floribus fere sessilibus fasciculatis; ovarium fusiforme ca. 12 mm. longum et 4 mm. crassum; perianthii tubus obconicus 5 mm. longus, segmentis anguste oblongis 2–2.5 cm. longis obtusis; stamina longiexserta, antheris fere 2 cm. longis; capsula late ovalis 2 cm. longa 12 mm. lata viridis breviter sulcata; semina semiorbiculares ca. 4 mm. longa.—Guatemala: Dept. Huehuetenango: Open limestone hillside, along Aguacatán road east of Huehuetenango at km. 13–14, altitude about 1,950 meters, January 2, 1941, Paul C. Standley 82039 (type in Herb. Field Mus.). Dry rocky hills north of Chiantla, 2,000–2,250 meters, January 6, 1941, Standley 82588. Near crossing of Río San Juan Ixtán, east of San Rafael Pézal, 1,730 meters, January 9, 1941, Standley 82857.

Perianth dark purplish green; filaments and style dark purplish red. Only one other species of the subgenus *Littaea* has ever been

reported from Guatemala, *A. dasylirioides* Jacobi & Bouché, and that is an altogether different plant with unarmed leaves. It is quite possible that ultimately *A. huehuetea* will have to be united with one of the Mexican species, but we have been unable to refer it satisfactorily to any of the species of this subgenus listed by Trelease from Mexico.

POLYGONACEAE

Gymnopodium floribundum Rolfe, var. **antigonoides** (Rob.) Standl. & Steyerl., stat. nov. *Millspaughia antennoides* Rob. Bot. Jahrb. 36, Beibl. 80: 14. 1905.

Triplaris melaenodendron (Bertol.) Standl. & Steyerl., comb. nov. *Vellasquezia melaenodendron* Bertol. Fl. Guat. 40. pl. 11. 1840. *T. Macombii* Donn. Smith, Bot. Gaz. 19: 257. 1894.

NYCTAGINACEAE

Mirabilis pulchella Standl. & Steyerl., sp. nov.—*Herba vel frutex erectus 30–100 cm. altus ramosus, ramis vetustioribus plus minusve glaucis ad nodos incrassatis, novellis dense pilis plurilocularibus villosis; petioli usque 1.5 cm. longi, foliorum superiorum multo breviores, dense longivillosi; lamina late ovata usque oblongo-ovata vel deltoideo-ovata 3–8.5 cm. longa 2.5–5.5 cm. lata acuta vel acuminata, basi plus minusve inaequali truncata usque obtusa, crassiuscula, utrinque subsparse pilis patentibus villosa, subtus paullo pallidior; pedunculi axillares et in cymulas vel racemos terminales parvos dispositi, usque ad 1.5 cm. longi sed saepius multo breviores dense villosi; involucrum campanulatum vel in statu maturo fere rotatum 7–10 mm. longum viride triflorum villosum, profunde 5-lobum, lobis trianguli-ovatis acutis vel acuminatus ciliatis; perianthium coralloideum roseo-purpureum 1 cm. longum infundibuliformi-campanulatum glabrum vel glabratum; stamina 3 exserta; fructus obovoideus ca. 5 mm. longus et 2.5 mm. latus obtuse 5-costatus, basin versus angustatus, sat dense pilosulus, costis crassis laevibus vel plus minusve corrugatis, sulcis rugulosis.*—Guatemala: Dept. Zacapa, brushy rocky slope, near divide on the road between Zacapa and Chiquimula, alt. 500–660 meters, October, 1940, *Paul C. Standley* 73841 (type in Herb. Field Mus.). Dept. Chiquimula, near the same locality as the preceding collection, *Standley* 73748. Dept. Chiquimula, between Ramírez and Cumbre de Chiquimula, on road between Chiquimula and Zacapa, 400–600 meters, *Standley* 74516.

The plant is frequent in the vicinity of the type locality, growing in damp thickets or on brushy rocky slopes. It is rather handsome and showy because of the abundance of rose-purple flowers, which close around noon, as in other species of the genus. Except for the widespread tropical *Mirabilis violacea* (L.) Heimerl, this is the first *Mirabilis* of the subgenus *Oxybaphus* to be reported from Central America. Its relationship is with *M. suffruticosa* Standl., of Oaxaca, which has merely puberulent branches and rounded or obtuse involucral lobes.

PHYTOLACCACEAE

***Stegnosperma scandens* (Lunan) Standl., comb. nov.** *Trichilia scandens* Lunan, Hort. Jam. 2: 320. 1814. *S. halimifolium* Benth. Bot. Voy. Sulph. 17. 1844.

BERBERIDACEAE

***Mahonia volcania* Standl. & Steyerl., sp. nov.** *Frutex erectus pauciramosus* 1-2-metralis; *folia breviter petiolata, foliolis 2-6-jugis approximatis; foliola rigide coriacea sessilia ovalia usque oblongo-ovalia vel late oblonga 2-4 cm. longa 1-1.7 cm. lata apice rotundata vel late obtusa et spinoso-mucronata, basi rotundata vel late obtusa, in toto margine spinoso-mucronato-serrata, serraturis parvis sub-adpressis, glabra, supra lucida, venulis prominulis pallidis arce reticulatis, subtus pallida, nervis venisque prominentibus reticulatis; flores racemosi, racemis sat dense multifloris ca. 3 cm. longis breviter pedunculatis, bracteis bracteolisque parvis inconspicuis acuminatis vel interdum obtusis et denticulatis, pedicellis gracilibus sed rigidulis usque 10 mm. longis; sepala exteriora late ovata 2 mm. longa; petala lutea ca. 6-7 mm. longa; baccae immaturae sessiles glabrae.*—Guatemala: Pine forest, slopes of Volcán de Agua along the trail above Santa María de Jesús, alt. about 3,000 meters, February, 1939, *Paul C. Standley* 65221 (type in Herb. Field Mus.); same region, January, 1937, *J. R. Johnston* 580. Region of Chémal, Huehuetenango, 3,300 meters, December, 1940, *Johnston* 1690.

This plant has been confused heretofore with *M. fascicularis* DC., which ranges from southern California southward to Veracruz. It is closely related to that species but apparently uniformly distinct in its small compact leaves, whose leaflets have small and appressed teeth rather than the large spreading ones characteristic of *M. fascicularis*.

***Mahonia Johnstonii* Standl. & Steyerl., comb. nov.** *Berberis Johnstonii* Standl. & Steyerl. Bot. Ser. Field Mus. 22: 140. 1940.

ANNONACEAE

Annona primigenia Standl. & Steyermark, sp. nov. — Arbor usque 10-metralis vel frutex altus, ramulis gracilibus glabris vel primo sparse pilis brevibus adscendentibus indutis; folia modica breviter petiolata membranacea in sicco fuscescentia, petiolo glabro 7-14 mm. longo; lamina elliptica usque lanceolato-oblonga vel obovato-oblonga 8-14 cm. longa 3-6 cm. lata, acuta vel abrupte acutata, interdum acuminata, basi subrotundata usque subacuta, supra glabra sublucida, costa anguste impressa, subtus fere concolor saltem in statu adulto glabra in axillis nervorum obscure domatiata, nervis lateraliibus utroque latere ca. 10 teneris; inflorescentiae e medio internodii exsertae pluriflorae, pedicellis fructiferis glabris 1.5-3 cm. longis rectis; fructus subglobosus 1.5-3 cm. diam., fere laevis vel interdum distinctius areolatus, sparse puberulus vel fere glaber; semina pauca vel numerosa lucida fusco-brunnea ca. 8 mm. longa. — Guatemala (Dept. Petén): Gavilán, Fallabón-Yaxha road, March, 1933, C. L. Lundell 2213 (type in Herb. Field Mus.), 2215. Uaxactún, April, 1931, H. H. Bartlett 12474. — British Honduras: San Antonio, high ridge, P. H. Gentle 569. — Mexico: Tuxpeña, Campeche, December, 1931, Lundell 1128.

Called Anonillo in Petén. The fruit is described as russet-colored and edible. It is probable that the species is represented also by Lundell 6651 from San Agustín, British Honduras. This specimen is in flower, the flowers being 1.5 cm. long, and like those of *A. reticulata* L., except that they are less densely pubescent.

The relationship of *A. primigenia* is with *A. reticulata* but in that, one of the important fruit trees of all Central America, the fruits are 10 cm. or often much more in diameter. It seems reasonable to assume that the small-fruited tree of the Yucatan Peninsula is a distinct species.

Sapranthus megistanthus Standl. & Steyermark, sp. nov.— Arbor 9-metralis, ramulis novellis dense pilis mollibus subpatentibus ochraceis tomentosis; folia crasse 5-6 mm. longe petiolata membranacea, petiolo dense ochraceo-piloso; lamina oblongo-elliptica 10-14 cm. longa 5.5-7 cm. lata acuta vel obtusa, basi obtusa, supra viridis molliter atque sat dense pilis albidis velutino-pilosa, subtus paulo pallidior ubique dense velutino-pilosa, reticulo venularum eleganter prominulo-reticulata; pedunculi oppositifolii crassi 1.5 cm. longi tomentosi; sepala utrinque tomentella anguste lanceolato-oblonga 2-2.5 cm. longa basi 7 mm. lata nervosa; petala maxima atropurpurea, intus sparse puberula extus subsparse tomentella,

ob lanceolato-oblonga 17-19 cm. longa ca. 7 cm. lata, apicem sub-
obtusum versus angustata, basin versus longe attenuata. —Guate-
mala: On roadside bank, Estancia Grande, Dept. Guatemala, alt.
about 600 meters, December 8, 1938, *Paul C. Standley* 59219 (type
in Herb. Field Mus.).

Only one tree was observed. The flowers are pendent, dark
purple-brown, and have a very strong and offensive, carrion-like
odor. The type was determined originally as *S. nicaraguensis* Seem.,
but more careful examination shows that probably it represents a
perfectly distinct species. In that the petals are only half as large,
and the sepals are much shorter and relatively broader. The flowers
are twice as large as those of any other member of the genus.

MENISPERMACEAE

Hyperbaena vulcania Standl. & Steyermark, sp. nov.—Frutex
scandens, ramulis subteretibus puberulis vel dense breviter patentibus
pilosulis, glabrescentibus; folia longipetiolata subcoriacea, petiolo
2-7 cm. longo et ultra pilosulo vel puberulo, serius glabratu, apice
paullo incrassato; lamina integra ovalis vel rotundo-ovalis usque
ovata vel rotundato-ovata vulgo 9-20 cm. longa atque 5.5-13 cm.
lata, apice obtusa vel rotundata et acuminata vel breviter acuminata,
basi rotundata usque breviter cordata, interdum obtusa, supra lucida
glabra, subtus brunnescens ad nervos pilosula vel puberula vel fere
omnino glabra, ima basi 5-nervia, costa supra basin utroque latere
nervos laterales vulgo 3 emittente, nervis venisque elevatis gracilibus,
venulis prominentibus laxe reticulatis, ultimis reticulum densem
prominulum efformantibus; flores feminei racemosi, racemis axillari-
bus pedunculatis vel sessilibus 7-12 cm. longis laxe paucifloris,
rhachi pedicellisque densiuscule pilosiusculis vel brunneo-puberulis,
pedicellis crassiusculis 6-15 mm. longis; sepala interiora 5 mm. longa
late ovata obtusa dense minute puberula, apicibus recurvis, exter-
oribus minutis ovatis; carpella densissime breviter pilosa.—Guate-
mala: Moist forest, a large vine over a tree, near Barranco Hondo,
above Las Lajas, Dept. Escuintla, alt. about 1,200 meters, January,
1939, *Paul C. Standley* 63878 (type in Herb. Field Mus.). Dept.
Quetzaltenango, between Finca Pirineos and Finca Soledad, lower
southern slopes of Volcán de Santa María, 1,300 meters, *Steyermark*
38517. Dept. San Marcos, vicinity of Finca El Porvenir, southern
slopes of Volcán de Tajumulco, 1,300-1,500 meters, *Steyermark*
37944, 37343, 37535.

Related to *H. hondurensis* Standl., which occurs in northern
Guatemala but differs in having pistillate inflorescences with pedicels

only 2-4 mm. long or even shorter. Most of the collections cited above are sterile, but probably belong to *H. vulcania*.

ROSACEAE

***Hirtella media* Standl., sp. nov.** Arbor glabrata 10-20-metralis, trunco usque 50 cm. diam., ramulis strigillosis vel fere glabris; folia inter minora breviter petiolata coriacea, petiolo ad 4 mm. tantum longo; lamina elliptico-ovata usque elliptico-oblonga saepius paullo supra medium latissima, 4.5-10 cm. longa 2-5 cm. lata, apice obtusa vel subacuta, basi cuneato-angustata et acuta, supra glabra in sicco fuscescens glabra, costa prominente, subtus fere concolor fere glabra sed saltem ad costam sparse strigosa; inflorescentiae terminales thyrsideo-paniculatae sat dense multiflorae foliis paullo longiores, ramis dense minute sericeis vel glabratiss, interdum elongatis et recurvis, secundifloris, floribus breviter pedicellatis vel sessilibus, bracteis ovatis parvis acutiusculis persistentibus conspicuis; hypanthium obovoideum adpresso pilosulum, sepalis reflexis late ovatis vel rotundo-ovalibus intus minute sericeis obtusissimis; petala late obovata alba vel lavendulacea glabra; stamina 3 longissime exserta; ovarium dense pilosum; drupa juvenilis oblongo-obovoidea apice late rotundata sparse breviterque strigosa.—Honduras: Guarunta, Wispernini Camp, Dept. Colón, alt. 15-23 meters, March, 1938, *Christine & Wolfgang von Hagen* 1378 (type in Herb. Field Mus.).—Mexico: Lobani, Oaxaca, 1841-43, *Liebmamn* 1751. Ubero, Oaxaca, alt. 30-90 meters, June, 1937, *Llewelyn Williams* 9480.

Related to *H. triandra* Swartz, a common species of Central America, which has larger long-acuminate leaves. *H. media* is noteworthy for the large size the tree attains, according to data supplied with three collections. Most species of the genus are shrubs of only 2-3 meters, and but few of the species attain such a height as 15 meters. The vernacular names used in Oaxaca are Jicaco and Jicaco prieto.

LEGUMINOSAE

***Aeschynomene eriocarpa* Standl. & Steyermark, sp. nov.**—Annua prostrata, caulis dense breviter albido-pilosis, pilis paucis longioribus viscidis patentibus intermixtis; stipulae parvae basi non productae late ovatae acutae striato-nervosae; folia parva, foliolis 3-4-jugis late oblongo-ovatis 5-8 mm. longis 3-5 mm. latis, apice late rotundatis, supra glabris, subtus pilis longis albidis subadpressis pilosis; racemi foliis longiores pauciflori, interdum

elongato-racemosi, rhachi valde geniculata dense albido-pilosa et viscido-pilosa, bracteis late ovatis obtusis pilosis; calyx 3 mm. longus dense breviter pilosus; corolla flava 7 mm. longa, vexillo sparse pilosulo; legumen vulgo 3-articulatum densissime albo-tomentosum, articulis isthmo angustissimo junctis semiorbicularibus.—Guatemala: Zacapa, rocky slopes, Santa Rossia, 2 miles south of Zacapa, alt. 200 meters, October 7, 1939, Julian A. Steyermark 29313 (type in Herb. Field Mus.).

Similar in most details to *A. biflora* (Mill.) Fawc. & Rendle, but distinct from that and the several other related species in its densely white-tomentose fruits, which bear no viscid hairs.

***Aeschynomene tricholoma* Standl. & Steyermark, sp. nov.**—*Annua erecta ramosa ca. 60 cm. alta, caulis dense viscido-hispidis; stipulae lineari-attenuatae basi productae striatae pectinato-dentatae hispidulae; foliola ca. 23-juga lineari-oblunga 5-10 mm. longa, obtusa vel subacuta et mucronata, apice denticulata, glabra, costa valde excentrica, nervis subtus prominentibus; racemi elongati laxi foliis subaequiflori, ramis hispidulis, bracteis lanceolato-ovatis longiacuminatis grosse dentatis, dentibus longe setoso-mucronatis; flores 7 mm. longi, calyce bilabiato glabro; vexillum glabrum; legumen marginibus sparse ciliatis exceptis glabrum, uno latere fere rectum, altero profunde constrictum, articulis vulgo 4, interdum 5, semiorbicularibus, laxe et subprominente reticulato-venosis, stipite calyce vix longiore.*—Guatemala: Dept. Chiquimula, brushy rocky slope, near the divide on the road from Zacapa to Chiquimula, alt. 660 meters, October, 1940, Paul C. Standley 73714 (type in Herb. Field Mus.). Dept. Jutiapa, region of El Tablón, northeast of Jutiapa, alt. 900 meters, damp thicket, October 31, 1940, Standley 75840.

In general appearance as well as in most details this is exactly like *A. americana* L. but it differs in having uniformly much broader pods, of somewhat distinctive appearance, and it is believed that a good species, perhaps of very local distribution, is represented.

***Bauhinia Herrerae* (Britt. & Rose) Standl. & Steyermark, comb. nov. *Schnella Herrerae* Britt. & Rose, N. Amer. Fl. 23: 206. 1930.**

***Canavalia munda* Standl. & Steyermark, sp. nov.**—*Frutex scandens, caulis glabris, petiolis foliolis brevioribus; foliola oblongo-elliptica vel oblongo-ovata 8-13 cm. longa 4-6 cm. lata acuminata vel anguste longiacuminata, basi rotundata vel obtusa, longipetiolulata, glabra, subtus sparse albido-punctata; racemi nodosi*

folia aequantes vel longiores; calyx campanulatus 10–12 mm. longus subdense sericeus, labio superiore tubo multo breviore emarginato, labio inferiore brevi, lobis 3 ovatis obtusis; corolla lilacina fere 3 cm. longa, vexillo lato ad anthesin reflexo; legumen 13–16 cm. longum 3 cm. latum, dense pilis fusco-brunneis velutino-pilosum, breviter stipitatum, valvis 3-costatis, costa media a sutura ventrali 7–8 mm. remota; semina late ovalia compressa castanea lucida 12–15 mm. longa 9–12 mm. lata, hilo fusco 5 mm. longo. Guatemala: Dept. Quezaltenango: Finca Pirineos, low southern slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–1,500 meters, December, 1939, Julian A. Steyermark 33179 (type in Herb. Field Mus.). Several other collections seen from the departments of Quezaltenango and San Marcos, western Guatemala.

Related to *C. villosa* Benth., in which the leaflets usually are abundantly pubescent and not punctate.

Climacorachis guatemalensis Standl. & Steyermark, sp. nov. — Herba annua erecta usque 80 cm. alta simplex vel ramosa, interdum suffrutescens, praeter inflorescentiam glabra; stipulae angustae 1 cm. longae prope medium affixae; foliola ca. 20-juga 6–8 mm. longa 1.5 mm. lata oblique acuta 3-nervia sessilia; racemi pauciflori flexuosi folia aequantes vel longiores, rhachi viscido-setulosa, pedicellis longis gracilibus; bracteae ovatae setuloso-ciliatae; calyx 3 mm. longus viscido-setulosus; legumen oblongum 1.5–2 cm. longum 5–7 mm. latum parum compressum, apice oblique rotundatum vel truncatum, densiuscule viscido-setulosum, pilis basi dilatatis et nigrescentibus; semina globosa 2 mm. diam. opaca nigro-olivacea. Guatemala: Dept. Huehuetenango: Pine-oak forest, Río Pucal, about 14 km. south of Huehuetenango, alt. about 1,800 meters, January, 1941, Paul C. Standley 82330 (type in Herb. Field Mus.); also no. 82370 from the same locality.

Two other members of this genus are known, each from a single collection made in Jalisco, Mexico. Both differ from the Guatemalan plant in their narrower fruit which is more or less constricted along the ventral margin.

Inga Skutchii Standl., sp. nov. — Arbor 9-metralis, ramulis novellis pilis mollibus brevibus fulvis adscendentibus sat dense pilosis; folia inter minora ca. 12–13 cm. longa, rhachi dense pilis subadpressis fulvis pilosa, inter paria foliorum glandula parva subglobosa elevata onusta; foliola parva 6–8-juga membranacea lanceolato-oblonga vel anguste elliptico-oblonga, terminalia paulo

majora, infima valde reducta, media et terminalia 3.5–5.5 cm. longa 1.2–2 cm. lata, apicem versus breviter vel longius angustata, apice ipso anguste obtuso et mucronato-apiculato, basi subinaequali obtusa vel anguste rotundata, supra ad costam breviter pilosa, aliter glabra, subitus paullo pallidiora sparse, ad costam densius, pilis parvis rigidis subadpressis hirtello-pilosa, costa nervisque lateralibus prominulis; flores albi spicati, spicis solitariis vel fasciculatis 10–11 cm. longis ca. 3 cm. longe pedunculatis remote laxaque multifloris, rhachi dense breviter adpresso-pilosa; calyx anguste tubulosus 5 mm. longus sparse hirtellus, lobis ovatis acutiusculis tubo bene brevioribus; corolla ca. 13 mm. longa dense strigosa, lobis ovatis acutis vix ultra 2 mm. longis; stamina ca. 3.5 cm. longa.—Costa Rica: By a forest stream, basin of El General, Prov. San José, alt. 675–900 meters, March, 1940, *Alexander F. Skutch* 4823 (type in Herb. Field Mus.).

An exceptionally distinct species for the genus; easy of recognition among Costa Rican ones because of the combination of numerous small leaflets and elongate, remotely flowered spikes.

Pachecoa Standl. & Steyerl., gen. nov.—Frutices erecti ramosi pilosi; stipulae linearis-subulatae striato-nervosae; folia imparipinnata, foliolis paucis integris mucronatis exstipellatis herbaceis; flores flavi, pedunculis axillaribus rigidis plerumque 2-floris; bracteae parvae lanceolatae rigidae, bracteolis subulatis vel fere filiformibus denticulatis; calyx basi attenuatus et stipitiformis, profunde 5-lobus, lobis lanceolato-attenuatis, 4 subaequalibus, infimo paullo longiore et angustiore; vexillum suborbiculare extus pilosum unguiculatum, alis oblique obovatis, carina incurva obtusa; stamina in tubum clausum connata, antheris ovalibus uniformibus; ovarium sessile pauci-ovulatum, stylo elongato, stigmate minuto terminali; legumen linearis-oblungum subtetragonum, suturis rectis, articulis quadratis dense breviter pilosis.—Type species, *Pachecoa guatemalensis* Standl. & Steyerl.

The genus is dedicated to Don Mariano Pacheco Herrarte, Director General de Agricultura de Guatemala, who for many years has labored with signal success to improve agricultural conditions in this republic. His celebrated gardens, and particularly their fine collection of orchids, are one of the most interesting sights to be seen in Guatemala City. His exhibits of orchids and other ornamental plants and of agricultural products of Guatemala supply each November one of the most attractive and instructive sections of the Feria Internacional that draws so many visitors from all Central America as well as from Mexico and the United States.

This genus is obviously related to *Chapmannia* Torr. & Gray, confined to Florida. *Chapmannia* is a herbaceous plant with similar leaves but with a long, terminal, wand-like, almost naked inflorescence; the calyx is closed in bud, and has very short, broad teeth; the legume is glandular-muricate and deeply constricted into ovoid subterete joints. *Pachecoa* is a tall shrub with hard stems and small axillary inflorescences; the calyx is open in bud and has long narrow lobes; the legume is merely pilose, not at all constricted between the seeds, the joints being quadrate and in cross section somewhat tetragonal.

***Pachecoa guatemalensis* Standl. & Steyermark, sp. nov.**—Frutex erectus 2-3-metralis, ramis striatis dense pilosis et sparse pilis viscidis luteis patentibus setulosis; stipulae persistentes adpresso-pilosulae 5-8 mm. longae; folia parva breviter petiolata; foliola vulgo 3-5 alterna breviter petiolulata late elliptica vel ovalia 13-25 mm. longa 7-14 mm. lata, apice rotundata et mucronata, basi obtusa vel rotundata, supra viridia pilosa et sparse setulosa, subtus dense pilis albidis subadpressis laxis pilosa; pedunculi folia aequantes vel breviores, pilosi et setulosi; calyx ca. 8 mm. longus pallide viridis adpresso-pilosus et sparse supra medium setulosus, lobis tubum fere aequantibus angustis attenuatis setoso-ciliatis; petala pallide aurantiaca, vexillo ca. 15 mm. longo extus dense piloso; legumen 1.5 cm. longum apice rostro 4-5 mm. longo auctum, 3-4 mm. latum, sessile, dense pilis brevibus non viscidis subpatentibus pilosum.—Guatemala: Dept. Jutiapa: Damp thicket near Jutiapa, alt. 850 meters, October, 1940, *Paul C. Standley* 75307 (type in Herb. Field Museum); also no. 75032 from the same locality.—Mexico: “Río Taba” (locality not certainly decipherable), 1841-43, *Liebmamn*.

The plant is abundant in thickets at the northeastern edge of Jutiapa, where it forms dense stands of considerable extent on some of the hillsides.

DICHAPETALACEAE

***Dichapetalum Brenesii* Standl., sp. nov.**—Frutex vel arbor 4-8-metralis, trunco usque 20 cm. diam., cortice laevi griseo, ramulis brunnescensibus sat gracilibus densiuscule sericeis vel strigosis, glabrescentibus, internodiis plerumque brevibus; stipulae parvae cito deciduae; folia modica breviter petiolata in sicco fusca sublucida crasse membranacea, petiolo crassiusculo vulgo 5-7 mm. longo; lamina elliptico-oblonga vel lanceolato-oblonga media vel paullo supra mediam latissima vulgo 7-15 cm. longa et 3.5-6 cm.

lata subabrupte longiacuminata, basin acutam versus angustata, supra ad costam nervosque strigosa, aliter glabra vel glabrata, venulis prominulis, subtus concolor ad nervos venasque strigosa vel fere omnino glabra; cymae parvae vulgo dense multiflorae, petiolo fere omnino cum pedunculo adnato, ramis dense sordide sericeis, floribus breviter crasseque pedicellatis congestis; bracteae parvae lineares extus tomentellae; sepala 2-2.5 mm. longa extus dense albido-tomentosa; drupa clavata vel anguste obovato-oblonga 2.5-3.5 cm. longa dense sordide adpresso-tomentulosa vix compressa.—Costa Rica: Zarcero, alt. 1,950 meters, deep forest, April, 1937, *Austin Smith* 4120 (type in Herb. Field Mus.). La Palma de San Ramón, March, 1929, *A. M. Brenes* 6766. La Ventolera, southern slope of Volcán de Poás, 1,700 meters, wooded quebrada, *Standley* 34723, 34674. Zarcero, *Austin Smith* 4104, 366519. Las Lajas de Zarcero, 1,575 meters, *Smith* 746. La Brisa de Zarcero, 2,200 meters, *Smith* H971. Panama: Progreso, Chiriquí, *Cooper & Slater* 172.

Heretofore the Costa Rican tree has been identified with *D. Donnell-Smithii* Engler, of Guatemala. It is, however, more closely related to *D. chiapasense* Standl., which ranges from Chiapas to British Honduras and Honduras, but is sufficiently distinct in its acute-based leaves and larger, narrower, minutely tomentulose fruit. *D. Donnell-Smithii*, confined so far as now known to Guatemala, has much larger and relatively broader, thin, densely pilose leaves. *D. Brenesii* is called Blancito in Panama. The corolla is described as white to cream-colored or pale yellow.

SAPINDACEAE

Serjania lobulata Standl. & Steyerl., sp. nov.—Frutex alte scandens, ramis subteretibus, novellis minute cano-puberulis; corpus lignosum simplex teres; folia pinnatim 5-foliolata, petiolo ut rhachi nudo puberulo; foliola inferiora longiuscule petiolulata, superiora sessilia, rhombea vel rhombeo-ovata, interdum oblongo-elliptica, 4-10 cm. longa 2-6 cm. lata, acuta vel obtusa, basi truncata usque acuminata vel cuneatim attenuata, grosse remoteque crenulata vel fere lobata, supra sat dense puberula, subtus pallidiora ubique dense breviter pilosula; thyrsi foliis breviores dense ochraceo-tomentulosi, cincinnis longipedunculatis paucifloris, bracteis minutis, pedicellis brevibus; sepala dense cano-tomentulosa 3.5-4 mm. longa suborbicularia apice rotundata; petala alba 5 mm. longa glabra intus glandulis parvis conspersa; fructus late cordatus ca. 2 cm. longus atque 2.5 cm. latus superne parum angustatus, loculis duris

subglobosis dense hirtellis rugoso-venosis, dissepimentis latis, alis tenuibus dense puberulis infra loculos non constrictis.—Guatemala: Dept. Chiquimula, near the divide on the road from Zacapa to Chiquimula, brushy rocky slope, alt. about 660 meters, October, 1940, *Paul C. Standley* 73715 (type in Herb. Field Mus.). Dept. Zacapa, rocky slopes near Santa Rosalia, 250-300 meters, October, 1939, *Steyermark* 29019; vernacular name Chilmecate.

Related to *S. Schiedeana* Schlecht. of Mexico, which has a different stem structure, much denser and more abundant pubescence, smaller flowers, and larger fruits.

Serjania macrocarpa Standl. & Steyermark, sp. nov.—*Frutex scandens*, ramis obtuse trigonis dense pilis subpatentibus brunneopilosis vel subtomentosis; corpus lignosum e centrali magno subteret et periphericis 3 parvis compositum; folia biternata, petiolo nudo, rhachi anguste marginata; foliola lanceolato-oblonga usque obovato-elliptica vel oblongo-elliptica 5-13 cm. longa 2.5-5.5 cm. lata acuminata vel abrupte acuminata, basi attenuata ad acuta, sessilia, sub-grosse remoteque crenato-serrata, supra sublucida tantum ad nervos puberula, subtus pallidiora sat dense velutino-pilosa; flores non visi; fructus ambitu late cordatus ca. 4 cm. longus et 4.5 cm. latus ubique dense molliter pilosulus vel ad loculos tomentosus, loculis triangularibus dorso acutissimis et subalatis, dissepimentis latissimis, alis tenuibus infra loculos non angustatis conspicue venosis. —Guatemala: Los Amates, Dept. Izabal, February 23, 1908, *W. A. Keller-man* 7532 (type in Herb. Field Mus.). —British Honduras: Vaca, El Cayo District, on hill slope, March, 1938, *P. H. Gentle* 2291.

The fruits are distinctive and not similar to those of any Mexican or Central American species of which we have seen material. They are unusually large and remarkable for the large hard seed-bearing portion, which is triangular in cross section and almost winged dorsally, the partition walls being relatively broader than in most species of the genus.

MALVACEAE

Pseudabutilon inornatum Standl. & Steyermark, sp. nov.—*Frutex* 1.5-3 m. altus ramosus, ramis pallidis dense pilis stellatis valde inaequilongis tomentosis; folia longipetiolata membranacea, petiolo 2.5-11 cm. longo; lamina late ovata vel rotundo-ovata 6-17 cm. longa 5-12 cm. lata acuminata vel longiacuminata, basi breviter cordata, crenato-dentata, inferioribus interdum angulatis vel breviter trilobis, supra viridis sparse minute stellato-puberula,

subtus paullo pallidior sparse vel subdense stellato-hirtella; flores in racemos elongatos interruptos paniculatos dispositi, plerumque aggregati, breviter pedunculati, pedunculis calyce vulgo brevioribus stellato-pilosis; calyx in statu fructifero campanulatus carpida arcte amplectens 5 mm. longus dense stellato-hispidulus, breviter 5-lobatus, lobis latissime ovatis acutis; fructus 6-8-carpidiatus ca. 5 mm. altus et 6 mm. latus, carpidiis apice late rotundatis dorso densissime stellato-hirtellis; semina uniseriata; carpida dissepimento a dorso oriente fere perfecte 2-locularia.—Guatemala: Near Amatitlán, Dept. Guatemala, alt. 1,170 meters, December, 1938, *Paul C. Standley* 61425 (type in Herb. Field Mus.); also no. 61400 from the same locality, growing in dry forest; *John R. Johnston* 1714.—Mexico: Río de Santa María, near Zazuapan, Veracruz, rocky soil, November, 1906, *C. A. Purpus* 2239.

Evidently referable to the subgenus *Abutilastrum*, and related to *P. paniculatum* (Rose) R. E. Fries of western Mexico. In that the fruit consists of 10-11 carpels which are acute or sharply angulate at the apex, while in *P. inornatum* they are broadly rounded, without any indication of an angle, and fewer.

GARRYACEAE

Garrya corvorum Standl. & Steyermark, sp. nov.—Frutex 2-metralis, ramulis crassis lucidis, novellis dense pilis albidis subadpressis indutis; folia parva rigide coriacea breviter petiolata, petiolo 3-5 mm. longo piloso; lamina oblonga vel elliptico-oblonga 2.5-4.5 cm. longa 1-1.5 cm. lata, apice obtusa vel subacuta et apiculata, basi obtusa vel anguste rotundata, supra lucida fere glabra, costa nervisque manifeste impressis, subtus opaca sat dense pilis albidis subadpressis pilosa, costa prominente, nervis lateralibus parum prominentibus inconspicuis, venis obsoletis; racemi masculi 3-3.5 cm. longi breviter pedunculati simplices terminales solitarii ubique dense pilis longis albidis pilosi; bracteae latissime ovatae usque 8 mm. longae alte connatae, cuspidato-acutae.—Guatemala: Dept. Huehuetenango, dense rocky (limestone) *Juniperus* forest, along the road in the region of Chémal, Sierra de los Cuchumatanes, at km. 36, altitude about 3,300 meters, December, 1940, *Paul C. Standley* 81651 (type in Herb. Field Mus.).

Only one shrub of the species was found. The only other species known from Central America, *Garrya laurifolia* Hartweg, differs in having much narrower bracts in the racemes, and much larger leaves in which the venation is not impressed or scarcely so.

CLETHRACEAE

Clethra bimatrata Standl. & Steyermark, sp. nov.—Arbor 12-metralis, trunco 30 cm. diam., ramulis densissime pilis longis laxis sordide brunneis tomentosis; folia magna petiolata membranacea, petiolo crasso 1.5–2.5 cm. longo dense piloso; lamina oblongo-ovata usque anguste ob lanceolato-oblonga 12–21 cm. longa 3–8 cm. lata, supra medium latissima, apicem versus plus minusve angustata, apice ipso obtuso usque acuto, basin versus late cuneato-angustata, basi ipsa obtusa vel anguste rotundata, margine basali utroque anguste recurvo, integra vel apicem versus remote serrata, supra viridis in sicco fusca primo sparse hirsuta glabrescens, sublucida, subtus glaucescens atque sordido-brunnescens, ubique tomento laxo non adpresso induta, costa nervisque brunneis atque tomentosis, nervis lateralibus utroque latere ca. 17 valde obliquis et adscendentibus fere rectis vel leviter curvis prominentibus, venis teneris manifestis; racemi numerosi elongati laxi paniculam amplam usque 28 cm. longam efformantes, rhachi pedicellisque dense brunneostellato-tomentosis, pedicellis rectangule divaricatis 4–5 mm. longis gracibus; calyx extus dense brunnescenti-tomentosus ca. 3 mm. longus, lobis ovalibus obtusissimis; petala calyce paullo longiora glabra, apice eroso-dentata et ciliata.—Guatemala: Entre Ríos, Dept. Izabal, July, 1927, *Henry Kuylen* 151 (Yale School of Forestry No. 10744; type in Herb. Field Mus.).—British Honduras: Temash River, in secondary forest, altitude 30 meters, August, 1935, *William A. Schipp* 1343.

This has been reported from Guatemala as well as from British Honduras under the name *Clethra lanata* Mart. & Gal., a Mexican species, not definitely known to occur in Guatemala or British Honduras. In that the flowers are conspicuously larger and the leaves relatively broader and generally rounded or broadly rounded at the apex.

Clethra licanoides Standl. & Steyermark, sp. nov.—Arbor 9-metralis, ramulis crassis dense brunneo-tomentosis; folia modica breviter petiolata rigide coriacea, petiolo crasso 1–1.5 cm. longo dense brunneo-tomentoso; lamina rotundo-ovata 8–10 cm. longa 5–7 cm. lata, apice latissime rotundata vel truncata et minute emarginata, basin versus paullo angustata, basi ipsa anguste rotundata vel obtusa, supra sublucida in sicco sublutescens ubique pilis minutis vix perspicuis depresso-stellatis conspersa, costa nervisque manifestis sed non elevatis, subtus viridis ubique pilis majusculis sat dense velutine stellato-pilosa, nervis lateralibus utroque latere

ca. 13 fere rectis angulo semirecto adscendentibus, venis prominulis; racemi usque 25 cm. longi laxiflori numerosi paniculam magnam latamque efformantes, rhachi dense brunneo-tomentosa, pedicellis ca. 5 mm. longis divaricatis vel subadscendentibus, floribus saepius nutantibus; calyx 4-5 mm. longus dense stellato-tomentellus, segmentis late ovatis vel ovalibus obtusissimis; petala glabra magna sepalis paullo longiora apice laciniata et erosa.—Guatemala: Dept. Jalapa, Potrero Carrillo, 13 miles northeast of Jalapa, altitude 1,500-1,700 meters, December 12, 1939, Julian A. Steyermark 33124 (type in Herb. Field Mus.).

Local name, Zapotillo. The flowers are fragrant, the petals white, the sepals buff with a slight tinge of pink. The relationship of the Guatemalan tree is with *C. lanata* Mart. & Gal., which has smaller flowers and relatively narrower leaves.

SOLANACEAE

Athenaea physocalycia (Donn. Smith) Standl. & Steyermark, comb. nov. *Brachistus physocalycius* Donn. Smith, Bot. Gaz. 90: 8. 1905.

Athenaea viscida (Standl.) Standl. & Steyermark, comb. nov. *Capsicum viscidum* Standl. Carnegie Inst. Wash. Publ. 461: 84. 1935.

Lycianthes cuspidata (Morton) Standl. & Steyermark, comb. nov. *Solanum cuspidatum* Morton in Lundell, Contr. Univ. Mich. Herb. 4: 25. 1940.

Lycianthes hondurensis (Morton) Standl. & Steyermark, comb. nov. *Solanum hondurensse* Morton in Lundell, Contr. Univ. Mich. Herb. 4: 26. 1940.

Physalis campanula Standl. & Steyermark, sp. nov. Herba ut videtur perennis laxe ramosa procumbens, caulis pilis longis viscidis albidis patentibus dense villosis; folia longipetiolata, petiolo 1-4 cm. longo viscido-villoso; lamina late ovata 3-7.5 cm. longa 2-5 cm. lata, subacuta usque longi-acuminata, basi late rotundata, integra vel undulata, interdum remote sinuato-dentata, supra viridis sparse breviter villosa, subtus concolor sparse breviterque villosa; pedicelli floriferi gracillimi 1.5-2 cm. longi dense viscido-villosi; calyx ad anthesin 1 cm. longus campanulatus dense pilis patentibus viscido-vilosus, basi subtruncatus, dentibus tubo lato paullo brevioribus triangularibus longe anguste acuminatis; corolla tubuloso-campanulata 18 mm. longa apice 8 mm. lata, extus breviter viscido-vilosula, intus glabra, limbo remote obtuso-dentato; stamina prope basin

corollae inserta, filamentis filiformibus paullo inaequalibus, antheris paullo ultra 3 mm. longis; calyx fructifer late ovoideus immaturus 2 cm. longus et 16 mm. latus, ut videtur teres et vix angulatus dense viscido-villosus, basi non depresso, apice abrupte contractus, lobis ca. 5 mm. longis fere subulatis. - Guatemala: Dry banks along upper part of Quebrada Canjulá, between Sibinal and Canjulá, Volcán de Tacaná, Dept. San Marcos, alt. 2,200 2,500 meters, February, 1940, Julian A. Steyermark 36067 (type in Herb. Field Mus.).

The species is noteworthy for its narrowly campanulate corolla, slightly contracted at the apex and altogether unlike the corolla usual in this genus. The fruit, however, i.e. the fruiting calyx, is quite typical for the genus, and there is no good reason for attempting to refer the plant to some other group, which could be done on the basis of corolla form alone.

Physalis carnosa Standl. & Steyermark, sp. nov.—Annua prostrata dense ramosa fere glabra, caulis crassis ca. 15 cm. longis carnosis subgeniculatis, novellis scaberulis; folia parva carnosa, petiolis crassis usque ad 15 mm. longis; lamina late ovata usque ovato-oblonga plerumque 1-2 cm. longa et 5-12 mm. lata, obtusa vel subacuta, basi cuneata vel obtusa, saepe valde inaequilateralis, primo minute scaberula, cito glabrata, nervis lateralibus utroque latere ca. 3 crassis subtus prominentibus; pedicelli floriferi 3-4 mm. longi minute puberuli, fructiferi vix longiores; calyx florifer 2.5 mm. longus obscure puberulus, dentibus anguste triangularibus acuminatis tubo paullo brevioribus; corolla ut videtur campanulata vix ultra 3 mm. longa; calyx fructifer ca. 12 mm. longus et 8 mm. latus late ovoideus basi non depresso glabratus arcte reticulato-venosus, obtuse pentagonus, dentibus brevibus conniventibus triangularibus acutis. --Guatemala: On sand dunes along the seashore, Ocós, Dept. San Marcos, March, 1940, Julian A. Steyermark 37766 (type in Herb. Field Mus.).

In technical characters, particularly its small flowers and fruiting calyces, this evidently is close to *P. Lagascae* Roem. & Schult. and *P. micrantha* Link. Those, however, are normally erect or ascending plants with delicate and very thin leaves. The leaves of *P. carnosa* as pressed are exceedingly irregular in outline, so much so that it is difficult to ascribe to them any normal leaf shape.

Physalis lassa Standl. & Steyermark, sp. nov.—Ut videtur vulgo perennis sed interdum annua, erecta vel procumbens vel decumbens,

ramosa, caulis dense pilis brevibus vel longiusculis eglandulosis patentibus pilosa vel subvillosa; folia petiolata, petiolo usque 2 cm. longo dense villosulo; lamina late ovata vel ovata 3-6 cm. longa 2-4.5 cm. lata acuta vel interdum obtusa, basi late rotundata vel subcordata, supra dense pilis brevibus mollibus villosula, subtus pilis paullo longioribus pilosa vel interdum fere puberula; pedicelli floriferi ca. 5 mm. longi dense villosi, fructiferi usque ad 13 mm. longi; calyx florifer ca. 9 mm. longus dense albido-vilosus, lobis tubo paullo longioribus anguste triangularibus acutis vel acuminatis; corolla late campanulata ca. 14 mm. longa, extus sparse villosula vel fere glabra; calyx fructifer 3-3.5 cm. longus 2 cm. latus dense villosulus vel breviter pilosus, basi vix depresso, obtuse pentagonus, dentibus ca. 8 mm. longis triangularibus acutis vel acuminatis; baccæ fere 1 cm. diam.—Guatemala: Dept. Jalapa, grassy thickets, between Jalapa and Montaña Miramundo, alt. 1,500-2,000 meters, December, 1939, Julian A. Steyermark 32868 (type in Herb. Field Mus.). Dept. Guatemala, Ignacio Aguilar 213. Sierra de las Minas, near San Gerónimo, Dept. Baja Verapaz, 1,140 meters, W. A. Kellerman 6656. Dept. Zacapa, grassy places, lower slopes of Sierra de las Minas, along trail above Río Hondo, 250-900 meters, Steyermark 29545.

This species bears some relationship to the Mexican one that has been referred to *P. peruviana* L. That South American species, however, does not occur in Mexico or Central America, so far as the available specimens show. *P. peruviana* differs from the Guatemalan plant here described in its much broader and conspicuously cordate leaves and in its larger and relatively broader fruiting calyx.

Solanum decurtatum Standl. & Steyermark, sp. nov.—Frutex ut videtur omnino inermis, ramis sat gracilibus, vetustioribus ochraceis, novellis dense pilis stellatis ochraceis sessilibus vel breviter stipitatis aequaliter ramosis tomentosis; folia solitaria integra vel vix undulata membranacea, petiolo 1-2 cm. longo dense stellato-tomentoso; lamina elliptico-oblonga vel ovali-oblonga prope medium latissima 5-8 cm. longa 2-3.5 cm. lata apice rotundata vel obtusa, interdum breviter acutata, basi plus minusve inaequali obtusa vel subacuta abrupte in petiolum contracta, supra viridis sat dense pilis parvis aequalibus stellatis tactu asperulis induita, subtus grisea dense molliterque pilis intertextis stellato-tomentosa, nervis lateralibus utroque latere ca. 7; inflorescentia terminalis vel pseudolateralis cymosa, interdum densa atque umbelliformis 3 cm. tantum lata,

saepius dichotomo-ramosa et usque 6 cm. lata, multiflora, ramis plus minusve elongatis et secundifloris dense griseo-stellato-tomentosis, pedicellis fructiferis usque 8 mm. longis; calyx fere 3 mm. longus densissime stellato-tomentosus, dentibus triangularibus sub-acutis brevibus; corolla ut videtur alba extus dense stellato-pilosula ca. 7 mm. longa stellata, lobis angustis sensim attenuatis intus glabris; stamina distincta glabra, antheris fere 5 mm. longis oblongo-linearibus sursum vix angustatis; bacca glabra globosa lucida 5-6 mm. diam.—Guatemala: Lago de Yaxha, Petén, March, 1933, C. L. Lundell 2012 (type in Herb. Field Mus.).—British Honduras: Corozal District, 1931-32, P. H. Gentle 121, 253.

A relative of *S. racemosum* Jacq. of the West Indies, which has usually much longer, mostly acute or acuminate leaves and anthers 7-9 mm. long.

RUBIACEAE

Borreria vegeta Standl. & Steyermark, sp. nov.—Herba annua erecta 30-60 cm. alta et ultra simplex vel pauciramosa, caulis crassis subteretibus sparse laxeque albido-pilosulis vel glabratiss; stipularum vagina laxa 5 mm. longa, setis paucis erectis aequilongis onusta laxe pilosa; folia herbacea, interdum usque 1 cm. longe petiolata, petiolo lato marginato; lamina lanceolato-oblonga usque ovata vel oblongo-elliptica 3.5-7.5 cm. longa 1.2-2.8 cm. lata attenuato-acuminata, basi cuneatim contracta, supra sparse scabra vel glabrata tactu aspera, costa nervisque subimpressis, subtus pallidior ad costam nervosque scabra vel hispidula, nervis lateralibus 6-7 valde obliquis prominentibus; capitula plerumque terminalia, interdum quoque ex axillis superioribus nascentia 2-2.5 cm. lata dense multiflora, floribus breviter pedicellatis; bracteae capitulorum terminalium foliis similes et aequimagnae, vulgo 4; hypanthium oblongum saltem superne villosulum; sepala 4 ovalia usque suborbicularia vel rotundato-ovovata viridia apice rotundata dense pectinato-ciliata glabra vel glabrata; corolla alba ca. 2.5 mm. longa extus glabra, lobis ovatis acutiusculis; antherae bene exsertae; capsula ovalis vel late oblonga 3 mm. longa superne villosula vel glabra membranacea calyce persistente coronata; semina teretia 2 mm. longa fusco-ferruginea profunde transverso-rugosa.—Guatemala: Dept. Jutiapa, between Jutiapa and La Burrera, northeast of Jutiapa, alt. 800 meters, November, 1940, in damp thicket, Standley 76007 (type in Herb. Field Mus.). Vicinity of Jutiapa, 850 meters, Standley 75041. Near El Molino (Dept. Santa Rosa), Dept. Jutiapa, 600 meters, wet thicket, Standley 78447. Dept. Santa Rosa, along the

Avellana road south of Guazacapán, 150 meters, weedy field, Standley 79475.

Because of the transversely rugose seeds as well as habit and general appearance, it is obvious that this plant is related to *B. laevis* (Lam.) Griseb. That, however, is a less stout plant, usually decumbent or procumbent, with conspicuously smaller flower heads and narrow, usually much smaller sepals.

Bouvardia Pachecoana Standl. & Steyerl., sp. nov.—*Frutex metralis* glaber; *vagina stipularis* ca. 4 mm. *alta setis paucis* 2-2.5 mm. *longis aucta*; *folia opposita membranacea*, *petiolo* 4-8 mm. *longo*; *lamina ovata vel oblongo-ovata* 5-10 cm. *longa* 2.2-4 cm. *lata acuta vel acuminata*, *basi obtusa vel acuta et interdum breviter decurrentis*, *utrinque in statu sicco pallida*, *nervis lateralibus utroque latere vulgo 3 prominulis*, *margine adpresso-ciliato*; *inflorescentia terminalis cymoso-corymbosa* *dense multiflora*, *bracteis pro parte foliaceis*, *pedicellis usque 6 mm. longis*; *hypanthium obovoideum* 1.5 mm. *longum basi obtusum*; *sepala* ca. 3 mm. *longa erecta triangulare-linearia attenuata* *viridia*; *corolla salmoneo-coccinea*, *tubo* 16-18 mm. *longo extus glabro sursum sensim dilatato ad faucem usque 3 mm. lato*, *lobis suberectis ovatis vel oblongo-ovatis* ca. 5 mm. *longis obtusis*; *stylus et stamina inclusa*.—Guatemala: Dept. San Marcos, in a wet, densely forested quebrada, Barranco Emilia, along the road between San Marcos and San Rafael Pie de la Cuesta, in upper part of the barranco between Finca La Lucha and Buena Vista, alt. 2,500-2,700 meters, February, 1941, *Paul C. Standley* 86226 (type in Herb. Field Mus.).

A well-marked species, not very closely related to any other of Guatemala or southern Mexico. From *B. dictyoneura* Standl. it differs in its obviously petiolate leaves, acute at the base or contracted and decurrent, and not reticulate-veined. The plant is a particularly handsome one because of its abundance of bright salmon-red flowers. It is named for Don Mariano Pacheco Herrarte, Director General de Agricultura of Guatemala, to whom we are indebted for many favors.

Crusea setosa (Mart. & Gal.) Standl. & Steyerl., comb. nov.
Borreria setosa Mart. & Gal. Bull. Acad. Brux. 11, pt. 1: 131. 1844.
Spermacoce setosa Hemsl. Biol. Centr. Amer. Bot. 2: 60. 1881.
Crusea cruciata Wats. Proc. Amer. Acad. 25: 152. 1890. *B. chiapensis* Brandeg. Univ. Calif. Publ. Bot. 10: 417. 1924.—While no specimen of *Galeotti* 2627, type of *Borreria setosa*, has been seen, there is in the Herbarium of Field Museum an excellent photograph of a

specimen of this number from the Paris herbarium. This, in association with the original description, shows clearly that the species represented is the same as the one that has passed as *Crusea cruciata* Wats., a plant of wide distribution in Mexico and Central America.

Hillia macrocarpa Standl. & Steyermark, sp. nov.—Frutex epiphyticus omnino glaber, ramis crassis ochraceis; folia in sicco coriacea, petiolo crasso ca. 4-7 mm. longo; lamina elliptico-oblonga vel oblanceolato-oblonga 6-8.5 cm. longa 2-3.5 cm. lata, acuta vel subacuminata, basi cuneato-angustata, prope vel paullo supra medium latissima, supra plana, nervis subtus obscuris planis, lateralibus paucis angulo angustissimo adscendentibus; capsula breviter crasse pedicellata anguste cylindracea 8-9 cm. longa, medio fere 1 cm. crassa, apice breviter angustata, basin versus longe sensimque angustata.—Guatemala: Dept. Quezaltenango, lower south-facing slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, along the great barranco between Finca Pirineos and Patzulín, alt. 1,300-1,500 meters, January, 1940, Julian A. Steyermark 33667 (type in Herb. Field Mus.).

Local name Jazmín. Leaves fleshy, coriaceous, rich grass-green above, paler beneath, with whitish green at base in the center; capsule pale green. Growing on a ridge in a cafetal. The relationship is with *Hillia loranthoides* Standl. of Costa Rica, which has capsules less than half as long.

Psychotria Aguilarii Standl. & Steyermark, sp. nov.—Frutex 1-1.5 m. altus ramosus, ramis gracilibus, novellis glabris; stipulae caducae ca. 1 cm. longae membranaceae ferrugineae glabrae, primo folia calypratim involentes, serius fissae; folia membranacea, petiolo 5-12 mm. longo glabro fere ad basin marginato; lamina oblanceolata vel oblongo-oblanceolata 8-12 cm. longa 2-3.5 cm. lata longe angusteque attenuato-acuminata, basin versus longe anguste attenuata et longe decurrentis, supra viridis glabra, nervis manifestis sed non elevatis, subtus pallidior glabra sed in axillis domatiatis nervorum sparse breviter barbata, nervis lateralibus pallidis utroque latere ca. 11 angulo semirecto vel paullo latiore adscendentibus, ad costam interdum sparse hirsuta; inflorescentia terminalis sessilis laxa pauciflora usque 4.5 cm. longa e basi pauciradiata, ramis glabris, bracteis parvis caducis, floribus ut videtur fere omnibus sessilibus dense ad apices ramulorum aggregatis; calyx cum hypanthio vix ultra 1 mm. longus glaber truncatus et remote obscure dentatus hypanthio obovoideo-conico paullo brevior; corolla alba extus glabra infundibuliformis 5 mm. longa fauce non

barbata, lobis 1.5 mm. longis obtusis ovato-ovalibus suberectis intus glabris; fructus intense ruber globosus 6 mm. diam., pyrenis dorso grosse granulatis ecostatis.—Guatemala: Dept. Chimaltenango: Damp wooded barranco along the road between Chimaltenango and San Martín Jilotepeque, alt. 1,500–1,700 meters, December, 1940, *Paul C. Standley* 80900 (type in Herb. Field Mus.).—Dept. Sacatepéquez: Near Barranco Hondo, southeast of Alotenango, 1,000–1,250 meters, *Standley* 65024.—Dept. Guatemala: Without locality, in 1939, *José Ignacio Aguilar* 215. Near Finca La Aurora, 1,500 meters, *Aguilar* 126.

The species is related to *P. nervosa* Swartz, to which it bears much superficial resemblance, but in that the fruits are conspicuously costate and longer than thick. In that species, too, there is usually ample pubescence on some parts of the plant.

***Psychotria erecta* (Aubl.) Standl. & Steyerl., comb. nov.**—*Ronabea latifolia* Aubl. Pl. Guian. 134. pl. 59. 1775, not *Psychotria latifolia* Humb. & Bonpl. 1819. *R. erecta* Aubl. op. cit. 156. 1775. *P. axillaris* Willd. Sp. Pl. 1: 962. 1798.—The genus *Ronabea* is maintained as distinct by Bremekamp in the *Flora of Surinam*, a treatment that has much justification, but on the whole it seems more practical to leave the single species in *Psychotria* where most authors have been content to place it.

***Psychotria Schippii* Standl. & Steyerl., sp. nov.**—Subgenus *Mapouria*. Frutex vel arbor saepe 5–9-metralis, trunco interdum 5–10 cm. diam., ramulis subteretibus glabris viridescentibus vel brunnescens interdum lenticellis magnis elongatis conspersis; stipulae caducae usque 1.5 cm. longae attenuatae glabrae firmae; folia majuscula breviter petiolata crasse membranacea vel subcoriacea, petiolo crasso 1–2.5 cm. longo, saepe fere ad basin marginato; lamina elliptica vel oblongo-elliptica 11–19 cm. longa 5–9.5 cm. lata abrupte acuminata vel caudato-acuminata, basi acuta vel subito contracta et longe decurrentis, supra in sicco lucida glabra, subtus paullo pallidior glabra sed in axillis nervorum saepius breviter sparseque barbata, nervis lateralibus utroque latere ca. 14 prominentibus angulo lato adscendentibus arcuatis; inflorescentia terminalis sessilis cymoso-paniculata copiose ramosa in statu fructifero plus minusve laxa multiflora, ca. 6 cm. longa et 8 cm. lata, ramis basalibus 3–4 crassiulus ferrugineis glabris, bracteis caducis, floribus sessilibus; fructus ruber globosus glaber 4–5 mm. diam. basi et apice rotundatus, pyrenis dorso obtuse costatis; calyx ad apicem fructus persistens breviter dentatus, dentibus obtusis vel rotundatis

minutis.—British Honduras: In advanced forest, limestone valley, Valentín, El Cayo District. June July, 1936, C. L. Lundell 6193 (type in Herb. Field Mus.). Columbia—Toledo, in 1927, G. H. Donald 2. In forest, Guatemalan boundary, 630 meters, occasional, Schipp S640.—Guatemala: Uaxactún, April, 1931, Bartlett 12534.

In most of its characters *Psychotria Schippii* approaches the common and widespread *P. nervosa* Swartz (*P. undata* Jacq.), but in that the leaves have much fewer nerves and the fruits are oval or ellipsoid, and evidently longer than broad.

Randia habrophlebia Standl. & Steyerm., sp. nov.—Frutex 2-3-metralis, ramis crassis, lateralibus brevibus crassis late divergentibus, foliis ad apices ramulorum dense aggregatis; stipulae brunneae glumaceae extus strigosae, intus dense sericeae; folia breviter petiolata herbacea, petiolo crasso 6-15 mm. longo densissime pilis longis ochraceis subadpressis piloso; lamina suborbicularis usque rotundato-ovata vel late elliptica 6.5-9.5 cm. longa 5.5-7.5 cm. lata, apice late rotundata usque obtusa, basi late rotundata vel obtusa, supra ubique densissime velutino-pilosa, ob nervos venasque plus minusve impressas bullata, subtus grisea vel ochracea ubique dense molliter tomentosa, nervis lateralibus utroque latere ca. 9 angulo acutissimo adscendentibus, venulis nervisque omnibus insigniter prominentibus et reticulatis; bacca terminalis solitaria sessilis globosa 3.5 cm. diam., fere laevis, ecostata, sat dense pilis subadpressis pilosa; semina compressa numerosissima.—Guatemala: Dept. Jutiapa, in thicket along river, vicinity of Jutiapa, alt. 850 meters, October November, 1940, Paul C. Standley 76321 (type in Herb. Field Mus.).

Closely related to *R. monantha* Benth., of the same region, but in that the leaves at maturity are hirsute or pilose with straight, not at all matted hairs; the leaves of the type specimen of *R. habrophlebia* are very old, yet still densely tomentose beneath with matted hairs. The venation, too, is unlike that shown in any specimens of *R. monantha*. It may be expected confidently that flowering specimens of *R. habrophlebia* will afford other characters for separating the two species. The type specimen is almost destitute of spines, but it is assumed that normally the spines are in 4's at the ends of the branches, as in related species of the subgenus *Basanacantha*.

Rondeletia brachistantha Standl. & Steyerm., sp. nov.—Arbor, ramulis gracilibus sed rigidis teretibus, novellis pilis adpressis fulvidis sparse pilosis; stipulae ca. 14 mm. longae reflexae brunneae oblongo-deltoidae obtusae, extus strigosae; folia subcoriacea, petiolo

usque 4 mm. longo; lamina ovata vel ovato-oblonga vel elliptico-oblonga 5-8 cm. longa 2.5-3.5 cm. lata acuta vel subacuminata, apice ipso obtuso, basi rotundata vel anguste rotundata, glabra vel subtus secus nervos sparse hirtella, subtus paullo pallidior, nervis lateralibus utroque latere ca. 5 prominentibus pallidis angulo semirecto adscendentibus; inflorescentia terminalis cymoso-corymbosa dense multiflora 2-5 cm. longe pedunculata 3-6 cm. longa 4-9.5 cm. lata, e basi triradiata, ramis dense fulvido-strigosis, bracteis minutis, floribus sessilibus vel subsessilibus; hypanthium globosum 1.5 mm. altum dense minute adpresso-hispidulum et primo paullo tomentosum, calyce 0.7 mm. alto, dentibus minutis remotis obtusis; corolla rosea extus ubique dense minuteque strigillosa, tubo 4-5 mm. longo sursum paullo dilatato fauce dense luteo-barbato, lobis late rotundatis vix ultra 1.5 mm. longis patulis intus puberulis; stylus glaber exsertus, antheris inclusis; capsula globosa 4-4.5 mm. lata basi rotundata glabrata loculicide dehiscens; semina 0.7 mm. lata subcompressa fuscobrunnea puncticulata. Guatemala: Dept. San Marcos, dry upper slopes, Río Vega, near San Rafael and Guatemala Mexico boundary, Volcán de Tacaná, alt. 2,500-3,000 meters, February, 1940, Julian A. Steyermark 36286 (type in Herb. Field Mus.).

Differing from *R. cordata* Benth. chiefly in the very small corollas, those of that species being almost twice as large. Further material will be necessary to decide whether the plant here described can be maintained as a distinct species.

Rondeletia Cordovana Standl. & Steyermark, sp. nov.—Arbuscula fere glabra, ramulis subteretibus, novellis sparse minute strigillosis; stipulae e basi triangulare subulatae ca. 3 mm. longae erectae; folia parva membranacea, petiolo gracili 5-10 mm. longo sparse minuteque strigilloso vel fere glabro; lamina lanceolato-oblonga 5.5-7.5 cm. longa 1.7-2.5 cm. lata longissime attenuato-acuminata, basi acuta, supra ad costam prominentem sparse minute pilosula vel omnino glabra, nervis non elevatis, subtus pallidior, in axillis nervorum barbata, aliter glabra, nervis lateralibus utroque latere ca. 6 arcuatis angulo lato adscendentibus; inflorescentia terminalis 1.5 cm. longe pedunculata erecta cymoso-corymbosa pauciflora ca. 3 cm. alta et 4.5 cm. lata basi trichotoma, floribus ad apices ramorum primariorum dense cymoso-aggregatis sessilibus vel usque 3 mm. longe pedicellatis, bracteis inferioribus foliaceis foliis conformibus sed parvis, usque 2 cm. longis, superioribus subulatis minutis; hypanthium obovoideum 1.5-2 mm. longum dense minute pallido-strigilosum; calyx maxime inaequaliter 4-lobus, lobis 3 linearibus vel linearis-subulatis ca.

3 mm. longis, quarto lanceolato-oblongo 5-6 mm. longo obtuso, omnibus sparse strigillosis vel fere glabris; corolla in alabastro apice obtusissima extus dense minuteque strigillosa.—Guatemala: Dept. Zacapa, cloud forest in ravine bordering Quebrada Alejandría, summit of Sierra de las Minas, vicinity of Finca Alejandría, alt. 2,500 meters, October, 1939, Julian A. Steyermark 29906 (type in Herb. Field Mus.).

The most closely related species is *R. aetheocalymna* Donn. Smith, of Alta Verapaz, in which the much larger leaves are oval, and the small calyx lobes are oval. The present species is dedicated to Don Alejandro Córdova, distinguished journalist of Guatemala, and proprietor of Finca Alejandría, where the junior author was a guest when the type material was collected.

COMPOSITAE

Liabum tajumulcense Standl. & Steyermark, sp. nov.—Frutex 4.5 m. altus, ramulis arachnoideo-tomentosis; folia non visa; capitula discoidea in paniculas multifloras contractas thyrsoides disposita, ramis dense ochraceo-tomentosis; bracteae ovatae vel lanceolatae 4-6 mm. longae extus dense lanuginosae intus glabrae, pedicellis dense tomentosis; involucrum campanulatum 4-seriatum 14-16 mm. altum, 17-20 mm. latum, bracteis 5-13 mm. longis gradatis ovato-lanceolatis usque linear-lanceolatis acuminatis, extus ochraceo-lanuginosis; discus luteus 1.5-2 cm. altus 1.5-2 cm. latus; corollae 12-13 mm. longae; achaenia immatura 5-costata compressa 4 mm. longa 1.5 mm. lata, dense sericeo-hirsutula; pappi setae inaequales, interiores 35-40 corollam fere aequantes 10-11 mm. longae, exterioribus brevioribus.—Guatemala: Dept. San Marcos: Moist thicket bordering stream, barrancos southwest of Tajumulco, northwestern slopes of Volcán de Tajumulco, alt. 2,300-2,500 meters, February, 1940, Julian A. Steyermark 36543 (type in Herb. Field Mus.).

Apparently related to *L. Deamii* Rob. & Bartl., but differing in its much larger heads and flowers; distinguished from *L. Klattii* Rob. & Greenm. by the densely lanuginose and more numerous involucral bracts and broader heads.

Stevia vulcanicola Standl. & Steyermark, sp. nov.—Frutex 2-3-metralis, caulis glutinosis; folia opposita petiolata elliptico-ovata usque ovata viscid-glutinosa pinnatinervia, 15-30 cm. longa 7-12 cm. lata, arcte crenato-dentata, supra puberula, acuta vel acuminata, basi abrupte cuneatim contracta, petiolo anguste alato 2-9 cm. longo;

inflorescentia corymbosa terminalis dense fastigiato-ramosa, ramis glabratis vel villosis; capitula 11–14 mm. alta sessilia vel breviter pedicellata; involucrum pallide viride, bracteis linearibus acuminatis vel cuspidatis sparse dorso hispidulis; corolla rosea vel pallide lilacina 6.5–7 mm. longa glandulosa; achaenia linearia ad angulos sparse hispidula fuscescentia 5.5–7 mm. longa, corona brevi acute dentata; setae nullae.—Guatemala: Dept. Quezaltenango: Pine-fir forest, Volcán de Santo Tomás, alt. 2,500–3,700 meters, January, 1940, Julian A. Steyermark 34757 (type in Herb. Field Mus.); also numerous other collections from the departments of Quezaltenango and San Marcos.

Similar to *S. polycephala* Bertol., but differing in its larger broader leaves, more contracted at the base, the margins with more salient and regular serrations.

STUDIES OF
CENTRAL AMERICAN PLANTS—IV

BY

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STUDIES OF CENTRAL AMERICAN PLANTS—IV

PAUL C. STANLEY AND JULIAN A. STEYERMARK

Almost all the new species described on the following pages are Guatemalan and were discovered during the four botanical expeditions to that country conducted on behalf of Field Museum of Natural History by the authors. The paper includes a few nomenclatorial changes found necessary in the course of preparation of the *Flora of Guatemala*, manuscript of which is now well advanced. The manuscript for the family Vacciniaceae on the following pages was contributed by Dr. A. C. Smith of the Arnold Arboretum, and that of the Apocynaceae and Asclepiadaceae by Dr. Robert E. Woodson, Jr., of the Missouri Botanical Garden.

BUTOMACEAE

Hydrocleis Standleyi Steyermark, sp. nov.—Caespitosa, rhizomatice abbreviato; folia longipetiolata, petiolis teretibus 25-30 cm. longis; lamina foliorum natantium firme membranacea ovalis vel late oblonga, basi et apice rotundata, 4-6.7 cm. longa 3-4 cm. prope medium lata, utrinque areolato-reticulata, nervis lateralibus 6; scapi 8-10 et 17-29 cm. longi umbellatim 5-11-flori; bracteae oblongo-lanceolatae vel ovato-lanceolatae, subacutae vel acutae, 1.8-2.5 cm. longae; pedicelli adscendentis apice paullo dilatati, 3-5 cm. longi; sepala membranacea erecta lanceolata, subobtusa vel subacuta, 15-19 mm. longa 3.5-4 mm. lata, costa excentrica, dorso carinata; petala lutea 6-7 mm. longa oblongo-ovata subobtusa; stamina fertilia 6, sterilibus 2-3, filamentis complanatis 2.5 mm. longis glabris; antherae oblongae 1.3-1.5 mm. longae; ovaria 3 lanceolata, stylis brevibus; follicula membranacea 12-13 mm. longa; semina numerosa hippocrepiformia brunnea 0.8-0.9 mm. longa.—Guatemala: Dept. Jutiapa: In swamp on plains along the railroad, between Agua Blanca and Amatillo, alt. about 950 meters, October, 1939, Julian A. Steyermark 30416 (type in Herb. Field Mus.).

Apparently related to the South American *H. parviflora* Seub., from which it differs in its acute rather than acuminate, more numerous bracts, which are broader and of a different shape; in the many-flowered instead of 2-3-flowered umbels; in the larger, obtuse or subobtuse rather than acutish leaves; in the fewer stamens; and in the wider, more bluntly tipped sepals.

CYPERACEAE

***Scleria latifolia* Swartz, var. *arundinacea* (Kunth) Standl. & Steyermark, stat. nov. *S. arundinacea* Kunth, Enum. Pl. 2: 347. 1837.—This differs from *S. latifolia* only in the color of the achenes, a character that can scarcely be of specific significance.**

COMMELINACEAE

***Campelia Standleyi* Steyermark, sp. nov.**—*Herba perennis* 60–100 cm. alta, caule sparse dense sericeo; folia caulina late oblanceolata vel oblongo-elliptica 9–25 cm. longa 2.5–6 cm. lata, acuminata vel caudato-acuminata, basin versus sensim angustata, parte basiliari petioliformi 1–2 cm. longa, supra glabra, subtus dense sericea; vaginae laxae membranaceae 1.3–2.5 cm. longae, sparse vel dense sericeae, marginibus ciliolatis; pedunculi terminales axillaresque, breves vel elongati, erecto-adscendentes, 1–15 cm. longi, dense sericei; bracteae ad basin inflorescentiae 2, reductae et spathiformes, ovatae, abrupte caudato-acuminatae, basi lata subcordatae vel rotundatae, subtus dense breviter sericeae, 1–2 cm. longae; pedicelli breves, bracteolis conspicuis scariosis 7–10 mm. longis; sepala 4.5–5 mm. longa firme membranacea; petala pallide lilacina vel alba; semina pallide brunnescens 2.3–3 mm. longa 1.5–2 mm. lata, convolute et non profunde rugosa.—Guatemala: Dept. San Marcos: Slopes above Finca El Porvenir, on "Todos Santos Chiquitos," lower southern slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, March, 1940, Julian A. Steyermark 37187 (type in Herb. Field Mus.); also Nos. 37211 and 37181, from the same locality. Wet forest, Finca Vergel, near Rodeo, 900 meters, March, 1939, Standley 68971.

In its 3-bracteate inflorescence this differs conspicuously from *C. hirsuta* Standl. and *C. Zanonia* (L.) HBK. The largest of the bracts in *C. Standleyi* is 8–11 cm. long and 3–4.5 wide, which is much larger than the largest ones in *C. Zanonia*, which are only 1.5–8 cm. long and 0.8–2.5 cm. wide. The peduncles in *C. Standleyi* are much more bracteate, the inflorescence is more densely flowered, and the sericeous type of pubescence on peduncles, upper portion of stems, leaves, and sheaths is not found in the other two species. In addition, the bractlets of *C. Standleyi* are larger than in the other species.

***Commelina erecta* L. var. *angustifolia* (Michx.) Fernald, forma *cana* Standl. & Steyermark, f. nov.**—A varietate *angustifolia* differt petalis albis.—Guatemala: Dept. Zacapa: Along railroad

between La Fragua and Estanzuela, alt. 200 meters, October 5, 1939, Julian A. Steyermark 29136 (type in Herb. Field Mus.).

This white-flowered form is most closely related to *C. erecta* L. var. *angustifolia* (Michx.) Fern. as defined by Fernald (Rhodora 42: 439. 1940). It was to be expected that albino forms should appear among the different varieties of *C. erecta* segregated by Professor Fernald.

Commelina erecta L. forma **candida** Standl. & Steyermark, f. nov.—A type differt petalis albis.—Guatemala: Dept. Zacapa: Shade of wooded slopes, along railroad, between Zacapa and Santa Marta, alt. 200 meters, October 7, 1939, Julian A. Steyermark 29267 (type in Herb. Field Mus.).—Mexico: Chihuahua: Canyon bottom, Guasaremos, Río Mayo, August 20, 1936, H. S. Gentry 2403; cespitose, stems weak and recumbent, as long as a meter; flowers white.

This form differs from typical *C. erecta* L. as defined by Fernald (Rhodora 42: 435–441. 1940) in the white instead of blue petals. On account of the long white-villous pubescence at the base of the spathes and the large, lanceolate or broadly ovate-lanceolate main leaves, it is most closely related to *C. erecta* forma *intervarsa* Fernald (Rhodora 42: 439. 1940).

Commelina erecta var. **angustifolia**, forma **villosa** (Clarke) Standl. & Steyermark, comb. nov.—*Commelina virginica* & *villosa* C. B. Clarke in DC. Monogr. Phan. 3: 183. 1881. *Commelina elegans* var. *hirsuta* Standl. Field Mus. Bot. 8: 136. 1930.

Commelina robusta Kunth, forma **vestita** (Clarke) Standl. & Steyermark, comb. nov.—*Commelina monticola* Seub. in Mart. Fl. Bras. 3, pt. 1: 264. 1855. *C. monticola* var. *vestita* C. B. Clarke in DC. Monogr. Phan. 3: 162. 1882.

Commelina Standleyi Steyermark, sp. nov.—Perennis herbacea, caulis erectis sparse foliatis 70–80 cm. altis, inferne glabratiss, superne scaberulis; folia linearia 7–13 cm. longa 2.5–4.5 mm. lata acuminata, basi vix angustata, utrinque dense scaberula, marginibus scaberulo-ciliatis pallidis incrassatis; vaginae inferiores et medianae 2.2–4 cm. longae 2.5–3 mm. latae, hirsutulae vel glabratae, margine densius albo-ciliato; pedunculi terminales 1–2.5 cm. longi scaberulo-hirtelli; spathae falcato-ovatae longi-acuminatae, 2–2.5 cm. longae 1–1.3 cm. altae, scaberulo-hirtellae, marginibus incrassatis scaberulo-ciliatis; flores caerulei.—Guatemala: Dept. Zacapa: Pine-covered

slopes, Sierra de las Minas along trail between Río Hondo and summit of mountain at Finca Alejandría, alt. 1,000–1,500 meters, October, 1939, Julian A. Steyermark 29644 (type in Herb. Field Mus.).

Commelina Standleyi is related to *C. erecta* var. *hamipila* (Wright) Fernald and to some forms of *C. scabra* Benth. in its narrow leaves, but it is amply distinct from both those species. From *C. erecta* var. *hamipila* it is distinguished at once by its ciliate and longer sheaths and by its narrower ciliate leaves, which are scabrous on both sides. From *C. scabra* it differs principally in its closed instead of open sheaths, and in the narrower leaves, which are not undulate on the margins as in *C. scabra*.

***Tinantia erecta* (Jacq.) Schlecht. forma *puberula* Standl. & Steyer., f. nov.—** Internodii superiores et medii caulis ubique minute pubescentes; caetera formae typicae speciei omnino similis.—Mexico: Chihuahua: Moist canyon bottom, oak-pine forest, Sierra Canelo, Río Mayo, August, 1936, H. S. Gentry 2525 (type in Herb. Field Mus.); flowers blue; upper stamens with yellow hairs, the lower ones with blue hairs. Guerrero: Río Balsas, August, 1910, C. R. Orcutt 4185. Puebla: Vicinity of San Luis Tultitlanapa, near Oaxaca, August, 1908, C. A. Purpus 3071.

In typical *T. erecta* the upper and middle portions of the stem are marked with two longitudinal lines of pubescence, but in f. *puberula* these portions are finely pubescent over the whole surface. From *T. macrophylla* Wats. this form differs in the glandular-pubescent sepals, the sepals in that species being eglandular and finely pubescent over the whole surface.

***Tinantia leiocalyx* C. B. Clarke, forma *glabra* Standl. & Steyer., f. nov.—** Caules glabri vel sparse pubescentes; folia supra pilis paucis tenuibus prope apicem exceptis glabra, subtus vulgo glabra, supra secus margines minute puberula, ciliolata, inferne in partem petioliformem usque 4 cm. longam angustata; vaginae longi-ciliatae glabrae vel sparse puberulae; pedunculi glabri vel puberuli; sepala glabra 8–11 mm. longa, apice plus minusve angustata.—Mexico: Veracruz: On rocks, El Fortín, September, 1934, C. A. Purpus 16201 (type in Herb. Field Mus.). Sinaloa, without locality, J. G. Ortega 6719.—Guatemala: Dept. Guatemala, in 1939, Ignacio Aguilar 118.

This differs from typical *T. leiocalyx* in having glabrous or sparsely puberulent instead of conspicuously retrorse-pubescent

stems, and in having the upper leaf surface almost glabrous rather than densely and finely puberulent.

Tinantia longipedunculata Standl. & Steyermark, sp. nov.—
Perennis, caulis erectis 30–50 cm. altis 3–4 mm. crassis, glabris vel sparse antrorso-puberulis; folia membranacea supra sparse denseve adpresso-pilosa, subtus glabrata vel sparse adpresso-puberula, dense ciliolata, 7–12 cm. longa 3–4.5 cm. lata inferne in partem petioliformem 1–3 cm. longam angustata; vagina dilatata membranacea laxe ciliata, glabrata vel sparse adpresso-pubescentes, 4–8 mm. longa 3–8 mm. lata; pedunculi graciles 5–10 cm. longi minute antrorso-pubescentes, simpliciter racemosi vel apice bifidi, 4–14-flori, inflorescentia 2–5 cm. longa 3–4 cm. lata, bracteis parvis vix evolutis ca. 1 mm. longis; pedicelli patentes vel adscendentibus 7–10 mm. longi, minute puberuli vel glabri; sepala glabra 8–9 mm. longa, apicem obtusum versus angustata; capsula 9 mm. longa 5 mm. lata.—Guatemala: Dept. Escuintla: Santa Lucía, alt. 300 meters, January, 1894, Heyde & Lux 6392 (type in Herb. Field Mus.).—Costa Rica: Guanacaste, in forest, alt. 10 meters, June, 1925, H. E. Stork 2770. Mexico: Sonora: In forest, San Bernardo, Río Mayo, August, 1935, H. S. Gentry 1655. Jalisco: Damp places in woods, Tuxpán, Hacienda del Conejo, alt. 20 meters, November, 1926, Ynes Mexia 1072. Without locality, Sessé & Mociño 4996.

Related to *T. leiocalyx* C. B. Clarke, and differing principally in the longer peduncles, which are curved or somewhat sigmoid rather than strictly erect. The sepals of *T. leiocalyx* are usually longer than those of *T. longipedunculata*.

Tinantia Standleyi Steyermark, sp. nov.—Perennis, caulis erectis 1 m. altis glabris vel glabratibus; folia supra sparse denseve minute pubescentia, subtus glabrata vel dense pubescentia, ciliata, abrupte acuminata, subsessilia vel sensim basi in partem petioliformem 1–2.5 cm. longam angustata; vagina membranacea glabra vel sparse villosula 1.5–2.5 cm. longa 1–2 cm. lata; pedunculi dense glanduloso-villosi apice 2–6-fidi, 16–100-flori, vulgo densiflori, inflorescentia 6–13 cm. longa 5–14 cm. lata; bracteae bene evolutae patentes lanceolatae vel ovatae acutae vel acuminatae dense glanduloso-villosae; sepala subobtusa dense glanduloso-villosa; petala 1 cm. longa; stylus barbatus; capsula 10–13 mm. longa 4 mm. lata; semina grosse rugosa 2.5–3 mm. longa 2.5 mm. lata.—Guatemala: Dept. Quezaltenango: Open moist thickets along stream, lower southern slopes of Volcán de Santa María, between Santa María de Jesús and

Calahuaché, alt. 1,300–1,500 meters, January, 1940, Julian A. Steyermark 33605 (type in Herb. Field Mus.). Above Mujuliá, damp dense mixed forest on white sand slopes, 1,800 meters, February, 1941, Standley 85496. San Marcos: Finca El Porvenir, Volcán de Tajumulco, 1,300–1,500 meters, Steyermark 37502. Dept. Chiquimula: Volcán de Ipala, 900–1,500 meters, Steyermark 30488. Dept. Sacatepéquez: Near Las Lajas, 1,200 meters, R. P. Strong 64.—Costa Rica: Las Nubes, 1,800 meters, P. H. Allen 710. Region of Zarcero, 1,500 meters, Austin Smith A633, H30.

This has been confused with *T. erecta* (Jacq.) Schlecht., from which it may be distinguished by the non-ciliate sheaths, long peduncles, stouter, more luxuriant habit, larger and differently shaped leaves, and larger sepals.

Tradescantia aguensis Standl. & Steyerm., sp. nov.—Herba perennis, caule erecto 50 cm. alto ramoso patenti-villoso, pilis 1–2 mm. longis; folia lanceolata vel oblongo-lanceolata 4–6.5 cm. longa 1–1.5 cm. lata acuminata, basi subaequaliter cuneata, supra sparse pilosa, ciliata; vaginae tenues 4–5 mm. longae 2–5 mm. latae villosae ciliatae; bracteae 2 inaequales lanceolatae 2–4 cm. longae 0.4–1.5 cm. latae; inflorescentiae terminales et axillares longi-pedunculatae, umbellis 3–4-floris, pedicellis patentibus vel reflexis filiformibus glabris vel glabratris 4–11 mm. longis; sepala tenuia scarioso-marginata 2–3 mm. longa lanceolato-oblonga acuta glabra; petala pallide caerulea 2.5 mm. longa; filamenta 1.5 mm. longa medio barbata; capsula 3–3.5 mm. longa, seminibus 5–6 fusco-brunneis inaequaliter sulcatis 1.25 mm. longis 1 mm. latis.—Guatemala: Dept. Sacatepéquez: Moist shaded bank, slopes of Volcán de Agua, north of Santa María de Jesús, alt. 1,800–2,100 meters, December, 1938, Paul C. Standley 59358 (type in Herb. Field Mus.).

This appears to be related to *T. geniculata* Jacq., from which it differs in the spreading pubescence of the stems, simple umbels, deflexed or spreading pedicels, more pubescent sheaths, glabrous sepals and pedicels, and the geminate bracts at the top of the stem. It is related also to *T. pulchella* HBK., from which it differs principally in its pubescence and longer pedicels.

Tradescantia disaggregata Kunth, forma **glandulosa** Standl. & Steyerm., f. nov.—A forma typica speciei differt pedunculis glabris, sepalis 5–6 mm. longis longe glanduloso-pilosis.—Guatemala: Dept. Zacapa: Pine-covered slopes, Sierra de las Minas, along trail between Río Hondo and summit of mountain at Finca Alejandría, alt. 1,000–

1,500 meters, October, 1939, Julian A. Steyermark 29751 (type in Herb. Field Mus.). Dept. Chimaltenango: Finca La Alameda, 1,800 meters, November, 1936, John R. Johnston 379.

In this form the peduncle is quite glabrous; in typical *T. disgrega* it is pubescent along one side. The sepals are longer than in typical *T. disgrega* and the gland-tipped hairs of the sepals are longer than those of the typical form.

Tradescantia disgrega Kunth, forma pubescens Standl. & Steyermark, f. nov.—A forma typica speciei differt caulibus foliisque villosis.—Guatemala: Dept. Guatemala: At 1,085 meters, October, 1928, Jesús Morales R. 1106 (type in Herb. Field Mus.).

Tradescantia guatemalensis C. B. Clarke, forma alba Standl. & Steyermark, f. nov.—A typo differt petalis albis.—Guatemala: Dept. Sacatepéquez: In cafetal, near Antigua, alt. 1,500–1,600 meters, November, 1938–February, 1939, Paul C. Standley 58025 (type in Herb. Field Mus.). Damp thicket, barranco above Dueñas, alt. 1,590–1,800 meters, January, 1939, Standley 63210.

This form differs from typical *T. guatemalensis* in its white instead of blue petals.

Tradescantia Standleyi Steyermark, sp. nov.—Perennis, caulis simplicibus vel superne ramosis suberectis crassis 90–120 cm. altis, ubique dense pilis brunnescentibus patentibus usque 3 mm. longis pilosis; folia tenuia, caulinis principalibus 12–18 cm. longis 5–6 cm. latis, oblongis usque ovato-ellipticis, acutis, basin versus angustatis, superioribus ovatis, basi late rotundatis vel subcordatis atque amplexicaulibus, utrinque dense pilis brevibus vel longis hirsutulis; vaginae 10–15 mm. longae 7–12 mm. latae pilis brunneis hirsutae, hirsuto-ciliatae, apice oblique truncatae; pedunculi terminales 2.5–6 cm. longi pilis patentibus brunnescentibus dense hirsuti; inflorescentia umbellata, umbellis paucifloris bracteis 2 spathiformibus vel subfoliaceis ovatis vel orbiculari-ovatis subaequalibus 2–3 cm. longis fulcratis, bracteis utrinque dense hirsutulis; pedicelli 9 mm. longi post anthesin recurvi dense villosuli; sepala ovata subobtusa, 3.5–5 mm. longa 2.5–3 mm. lata, sepalorum 2 glabris vel sparse prope basin pilosis, tertio dense brunneo-villoso; petala lilacina; capsula 4 mm. alta, seminibus 6 griseo-brunneis 1.5–2 mm. longis minute rugulosis.—Guatemala: Dept. Chiquimula: Cloud forest on summit of Montaña Nonojá, east of Camotán, alt. 1,800 meters,

November, 1939, Julian A. Steyermark 31696 (type in Herb. Field Mus.).

Somewhat resembling *T. belizensis* Standl., but distinguished at once from that by the spreading pubescence of much longer hairs, and by the larger leaves. It is distinguished from other local species by its spreading pubescence, large leaves, and pedunculate umbels.

AMARYLLIDACEAE

***Pancratium guatemalense* Standl. & Steyermark, sp. nov.**

Bulbi tunicati subglobosi vel late ovoidei 10–12 cm. diam.; folia ad anthesin 15–16 plerumque disticha subtus pallide viridia, inferne sensim in petiolum marginatum angustata, 48–90 cm. longa late elliptico-oblonga vel late oblanceolata, 11–19 cm. lata, parte petiolari 15–23 cm. longa 1–3.5 cm. lata, apice abrupte caudata; pedunculus 75–100 cm. altus, floribus ca. 20 sessilibus; spathae valvae membranaceae cuspidato-deltoidae ad anthesin reflexae; flores odori 30–38 cm. longi, tubo 16–20 cm. longo 7 mm. crasso; perianthii segmenta alba superne viridescentia linearis-lanceolata recurva et torta, 10–12 cm. longa 8 mm. lata, sensim acuta, apice ipso subtereti et involuto; cupula staminalis alba tenuiter membranacea infundibuliformis 2 cm. longa dentata, dentibus 7–8 mm. longis caudato-triangularibus; filamenta alba, superne intense viridia, 6 cm. longa; antherae lineares luteae 2.5 cm. longae; stylus 25 cm. longus; ovarium oblongum 2.5–3 cm. longum obtuse angulatum; ovula in quoque loculo 4–5.—Guatemala: Dept. Izabal: Along stream near waterfall between Escobas and Montaña Escobas, across the bay from Puerto Barrios, at or near sea level, April 13, 1940, Julian A. Steyermark 39288 (sterile specimen). Flowering material, from bulbs from this locality, grown at Garfield Park Conservatory, Chicago, flowering in November, 1941, Steyermark 39865 (type in Herb. Field Mus.). Several additional collections of the plant have been made in Guatemala more recently.

This is one of the showiest species of the genus. We are interpreting *Pancratium* here as including *Hymenocallis*. The two have been separated by many authors upon the basis of the number of ovules in the ovary cells, and upon continental distribution. The ovule number is not a constant character, and geographic distribution alone has been admitted by but few botanists as being a distinctive generic character. *P. guatemalense* appears to be most closely related to *P. undulatum* HBK., but differs from that in its much larger anthers, longer perianth segments, and abruptly caudate

rather than acute leaves. From the common *P. littorale* Jacq. of Central America it is distinguished by its broad petiolate leaves.

Pancratium Skinnerianum (Herb.) Standl. & Steyerm., comb. nov. *Hymenocallis Skinneriana* Herb. Bot. Reg. 1843: Misc. 45. 1843.

IRIDACEAE

Sisyrinchium guatemalense (J. G. Baker) Standl. & Steyerm., stat. nov. *Sisyrinchium alatum* var. *guatemalense* J. G. Baker, Handb. Irid. 130. 1892.

MARANTACEAE

Calathea coccinea Standl. & Steyerm., sp. nov.—Herba, radicibus filipendulis, partibus tuberosis napiformibus 2.3–2.7 cm. longis 1–1.2 cm. latis; folia ad anthesin deficiencia; folia juvenilia subtus sparse minute puberula; spica pedunculata oblonga 3.5–5 cm. longa 1.5–2 cm. crassa, pedunculo erecto gracili glabro 32–38 cm. longo 1–1.5 mm. crasso; bracteae 7–8 rubrae subdistichae vix imbricatae rhombeo-ovatae, abrupte acuminatae, acumine triangulari ca. 1.5 mm. longo, insigniter multistriatae, glabrae vel glabratae, late scariosae, 10–11 mm. longae 7–9 mm. latae, 4–6-florae; bracteolae 7, scariosae, extimus 8–9 mm. longis 3.5–4.5 mm. latis, elliptico-ovatis, subobtusis; ovarium glabrum 3-loculare; sepala elliptico-oblonga vel oblongo-oblanceolata subobtusa tenuiter membranacea, 10 mm. longa 3–3.2 mm. lata, 5-nervia glabra; corolla glabra coccinea, ca. 3 cm. longa, tubo hypocrateriformi-cylindraceo 20–22 mm. longo, basi 1.5 mm. crasso, fauce 3 mm. lato, lobis obliquo-lanceolatis acutis 11–13 mm. longis 2.5–3 mm. latis; stamen elliptico-oblongum subcompressum fere 3 mm. longum, subexsertum; staminodium exterius 10–12 mm. longum late oblique rhombico-ovovatum. Guatemala: Dept. San Marcos: Wooded rocky slopes above Finca El Porvenir, along Río Cabús, southern slopes of Volcán de Tajumulco, alt. 1,300–1,500 meters, March, 1940, Julian A. Steyermark 37945 (type in Herb. Field Mus.).

Unfortunately this species is known only from imperfect and unsatisfactory material, but it appears well marked by the perianth, which is scarlet throughout. In general appearance it simulates *C. cyclophora* Baker, but in that the crowded bracts are minutely pilosulous. *C. coccinea* seems to belong to subgenus *Eucalathea*, as defined by Schumann.

ULMACEAE

Trema micrantha (L.) Blume, var. **floridana** (Britton) Standl. & Steyerm., stat. nov. *T. floridana* Britton ex Small, Fl. Southeast. U. S. 366, 1329. 1903.

Trema micrantha (L.) Blume, var. **strigillosa** (Lundell) Standl. & Steyerm., stat. nov. *T. strigillosa* Lundell, Phytologia 1: 387. 1939.

MORACEAE

Brosimum panamense (Pittier) Standl. & Steyerm., comb. nov. *Piratinera panamensis* Pittier, Contr. U. S. Nat. Herb. 20: 100. pl. 7. 1918.

Dorstenia Contrajerva L. var. **tenuiloba** (Blake) Standl. & Steyerm., stat. nov. *D. Contrajerva* subsp. *tenuiloba* Blake, Contr. U. S. Nat. Herb. 24: 2. pl. 1. 1922.

LORANTHACEAE

Oryctanthus guatemalensis (Standl.) Standl. & Steyerm., comb. nov. *Struthanthus guatemalensis* Standl. Field Mus. Bot. 17: 237. 1937.

Phoradendron Aguilarii Standl. & Steyerm., sp. nov.—*Aequatoriales-Robustissimae*. *Frutex parasiticus* saepe dense ramosus glaber in sicco aureo-brunnescens, ramis crassis teretibus ad nodos plus minusve dilatatis et compressis, cataphyllis tantum basalibus; folia crasse coriacea crasse breviterque petiolata oblongo-oblanceolata 4–8 cm. longa 1–1.5 cm. lata supra medianam latissima, apice anguste rotundata vel obtusissima, basin versus sensim attenuata, basinervia, nervis inconspicuis non elevatis, costa obscura percurrente; spicae floriferae fasciculatae subsessiles, fructiferae vix 2 cm. longae, articulis 3–4 crassis vulgo 6-floris, squamis minute ciliatis; sepala acuta inflexa.—Guatemala: Dept. Jutiapa: On *Quercus*, Volcán de Suchitán, northwest of Asunción Mita, alt. 1,000–2,050 meters, November 18, 1939, Julian A. Steyermark 31889 (type in Herb. Field Mus.). Dept. Guatemala: Without definite locality, José Ignacio Aguilar 414. Dept. Chimaltenango: On *Quercus*, near San Martín Jilotepeque, 1,800 meters, Standley 64379. Dept. Quiché: Barranco south of Chichicastenango, 1,850 meters, Standley 62410.

A relative of *P. robustissimum* Eichler, but all the specimens at hand are quite uniform, and differ from that species in their much smaller and narrower leaves.

Phoradendron huehueteum Standl. & Steyerm., sp. nov.—
Frutex parasiticus ramosus glaber in sicco lutescenti-brunnescens 30 cm. altus et ultra, ramis teretibus vel subteretibus subgracilibus ad nodos non dilatatis, cataphyllis tantum basalibus brevibus; folia ca. 6 mm. longe petiolata modice coriacea lanceolata interdum subfalcata vulgo 4–7 cm. longa atque 1–1.5 cm. lata, apicem obtusum versus sensim longiuscule attenuata, basi attenuata, palmatim 5-nervia, nervis tenerrimis utrinque manifestis et prominulis; spicae adultae non visae, juveniles sessiles crassae 1.5 cm. longae 2–3-articulatae pauciflorae, floribus 4-seriatis.—Guatemala: Dept. Huehuetenango, on *Quercus*, near Táchique, east of Huehuetenango, alt. 1,900 meters, January, 1941, *Paul C. Standley* 82597 (type in Herb. Field Mus.).

Perhaps related to *P. nervosum* Oliver, but very different in appearance because of its much smaller leaves.

Phoradendron Treleaseanum Standl. & Steyerm., sp. nov.—
Frutex ramosus, ramis crassis teretibus ubique dense minute puberulis, cataphyllis tantum basalibus subtruncatis puberulis; folia sessilia anguste oblonga 3.5–5 cm. longa 1–1.5 cm. lata obtusissima, basi breviter angustata, basi ipsa lata, utrinque minute puberula atque granulosa, crasse coriacea rigida, subtus paullo pallidiora, basinervia, nervis occultis; spicae vix ultra 1.5 cm. longae crassissimae subsessiles fasciculatae dense puberulae, articulis 1–2 et 8–10-floris, floribus 4-seriatis; fructus globoso-ovoideus 4 mm. longus densissime puberulus; sepala aperta.—Guatemala: Dept. Baja Verapaz, Sierra de las Minas, opposite El Rancho (El Progreso), alt. 700 meters, January, 1908, *W. A. Kellerman* 7630 (type in Herb. Field Mus.).

An unusually well-marked species, noteworthy for the small, very thick and hard, obtuse leaves, and for the fine dense pubescence covering all parts. The only other Guatemalan species with pubescence is *P. velutinum* Nutt., which has conspicuously petiolate, long-attenuate, much thinner leaves.

Psittacanthus mayanus Standl. & Steyerm., sp. nov.—Frutex glaber ramosus 30 cm. altus et ultra, ramis crassis continuis plus minusve compressis subacute quadrangularibus, vetustioribus ochraceis subteretibus; folia opposita vel superiora subopposita, breviter crasseque petiolata in sicco coriacea, falcato-lanceolata usque oblonga vel oblongo-elliptica 4.5–7 cm. longa 1–3 cm. lata, apicem acutum versus attenuata vel saepius apice obtusa vel anguste rotundata, basi acuta vel attenuata, 3–5-plinervia, nervis utrinque prominenti-

bus; flores corymbosi, corymbis vulgo dense multifloris, interdum laxe paucifloris, pedicellis umbellatim ternatis 10–13 mm. longis rectis; bracteolae cupulares 1.5 mm. longae; calyx campanulatus subtruncatus 3 mm. latus et fere aequilongus; corolla 3–5 cm. longa coccinea in alabastro linearis subrecta apice non dilatata obtusa glabra, petalis ad anthesin fere filiformibus revolutis; antherae 2–2.5 mm. longae; bacca ovalis 6 mm. longa calyce persistente coronata.—British Honduras: On *Bursera Simaruba*, Santa Rita, September 14, 1933, *Percy Gentle* 116 (type in Herb. Field Mus.).—Honduras: Concepción, Dept. Yoro, *J. B. Edwards* P651.—Mexico: Campeche: Palizada, *E. Matuda* 3898. Yucatan: Without definite locality, *G. F. Gaumer* 755. Pixila, *Gaumer* 23213. Chichén Itzá, *W. C. Steere* 1384. Muna, *Steere* 2150, 2158.

This probably has a still wider range in Mexico. It is possible that some earlier name based upon Mexican material can be found for the species, but we have not discovered one. *P. mayanus* is related to *P. calyculatus* (DC.) Don, with which it has been confused, but in that the corolla buds are conspicuously thickened at the apex and acute, and the corolla is outcurved rather than straight in bud. The leaves of *P. mayanus* average substantially smaller than those of *P. calyculatus*. *P. mayanus* has been reported from Yucatan as *P. americanus* (L.) Mart., but that is a species probably confined to the Lesser Antilles and northern South America.

Struthanthus brachybotrys Standl. & Steyermark, sp. nov.—*Frutex glaber ramosus erectus vel dependens, ramis rectis non radices emittentibus, teretibus striatis ochraceis vel griseis, internodiis brevibus; folia inter minora sessilia vel subsessilia tenuiuter coriacea in sicco pallide brunnescens vel rare fusca, lanceolato-oblonga, ovato-oblonga vel oblongo-elliptica, vulgo prope medianam latissima, 4–7.5 cm. longa 1.2–3 cm. lata acuta vel subobtusa, basi cuneato-angustata, nervis lateralibus teneris utrinque prominentibus angulo angusto adscendentibus, subtus interdum obsoletis; inflorescentiae solitariae pedunculo 7–8 mm. longo inclusu 1.5–2 cm. longae fere capituliformes dense pauciflorae, ternationibus fere sessilibus, pedunculis brevissimis crassis, floribus sessilibus congestis viridibus; calyx paullo ultra 1 mm. latus subtruncatus laevis; corolla in alabastro clavato-obovata superne sensim dilatata, 4 mm. longa, extus laevis, tubo crasso; fructus ellipsoideus aurantiacus 6–8 mm. longus basi et apice rotundatus.*—Guatemala: Dept. Huehuetenango: Pendant on *Quercus*, Río Pucal about 14 km. south of Huehuetenango, alt. about 1,780 meters, January, 1941, *Paul C. Standley* 82430 (type)

in Herb. Field Mus.); also no. 82274; February, 1939, *Standley* 65796. Dept. Guatemala, Lago de Amatitlán, alt. 1,200 meters, *Kellerman* 5043.

It is possible that this may be *S. Oerstedii* (Oliver) Standl., whose type was collected at Granada, Nicaragua. We have seen no authentic representation of that species, and the too brief description does not agree satisfactorily with the Guatemalan plant.

Struthanthus Johnstonii Standl. & Steyerl., sp. nov.—*Frutex parasiticus* glaber ramosus suberectus vel dependens, ramis crassis radices aereas non emittentibus subteretibus ferrugineis, internodiis foliis brevioribus; folia breviter petiolata crasse coriacea, petiolo crasso usque 7 mm. longo; lamina ovata, oblongo-ovata vel elliptico-ovata vulgo 5–9 cm. longa atque 2.5–4 cm. lata, acuta vel breviter acuminata, apice ipso acuto, basi subito in petiolum contracta et obtusa vel subrotundata, in sicco fusco-viridis, supra plus minusve rugulosa, subtus pallidior dense minuteque granulosa; inflorescentiae femineae sessiles pauciflorae capituliformes, floribus arcte sessilibus; calyx glaucescens truncatus 2 mm. latus laevis glaber; fructus oblongus vel ellipsoideus 7–12 mm. longus 4–6 mm. crassus arcte sessilis, apice late rotundatus vel subtruncatus.—Guatemala: Dept. Huehuetenango: On *Quercus*, west of Aguacatán, on the road to Huehuetenango, at km. 12, January 2, 1941, *John R. Johnston* 1887 (type in Herb. Field Mus.). Aguacatán road, 10 km. east of Huehuetenango, 1,900 meters, January, 1941, *Standley* 82158. Along road 13 km. west of Huehuetenango, near Puente de Xinaxó, *Standley* 81544. Vicinity of Táchique, east of Huehuetenango, 1,900 meters, *Standley* 82602.

Noteworthy for the small few-flowered head-like pistillate inflorescences.

Struthanthus papillosum Standl. & Steyerl., sp. nov.—*Frutex ramosus* dependens, ramis gracilibus saepe multo elongatis, teretibus, ferrugineis vel griseis, vulgo radices aereas emittentibus, internodiis plerumque elongatis; folia subcoriacea in sicco fuscescentia graciliter 5–10 mm. longe petiolata lanceolata usque ovata vel oblongo-ovata, vulgo 6–8 cm. longa et 2–3.5 cm. lata, subabrupte acuta vel longiuscule acuminata, apice ipso acutissimo, basi subito contracta et rotundata vel obtusa, penninervia, subtus pallidiora, nervis vulgo conspicuis teneris, venis arcte reticulatis interdum prominulis; inflorescentiae ad axillas solitariae vel saepius fasciculatae plerumque 6.5 cm. longae vel breviores folia aequantes vel eis breviores, breviter

pedunculatae, simpliciter racemosae interruptae graciles, ramis plus minusve minute albido-papillosum, ternationibus graciliter ca. 3 mm. longe pedunculatis, floribus viridibus sessilibus; calyx paullo ultra 1 mm. latus dense minuteque albido-papillosus; corolla in alabastro anguste cylindracea 4 mm. longa, apice non vel vix dilatata, petalis linearibus; stamna petala subaequantia.—Guatemala: Dept. Alta Verapaz: Parasitic on *Erythrina*, Cobán, alt. 1,350 meters, June, 1906, *H. von Tuerckheim* II.1240 (type in Herb. Field Mus.).

There are referred here numerous other collections from Alta Verapaz and Baja Verapaz. It is somewhat questionable whether this is a good species, but especially in the type collection the papillosity on the inflorescence is conspicuous and distinctive. Whether this constitutes a valid specific character remains to be determined when the genus is monographed critically.

NYCTAGINACEAE

Bougainvillea Buttiana Holttum & Standl., sp. nov.—Frutex scandens elatus aculeatus, aculeis rectis divaricatis crassiusculis usque 1 cm. longis, ramis floriferis saepe inermibus, ramulis novellis sparse pilis brevibus arcte adpressis pilosulis vel interdum fere glabris, adultis glabris, internodiis brevibus; folia majuscula graciliter petiolata herbacea, petiolo vulgo 1.5–3.5 cm. longo sparse adpresso-pilosulo vel fere glabro; lamina ovato-rotundata vel late elliptico-ovata 13 cm. longa et 10 cm. lata vel saepius minor, apice subrotundata et abrupte contracto-acuminata, basi saepius truncata vel late rotundata, interdum obtusa, in statu adulto fere glabra sed primo sparse pilis brevibus subadpressis laxis conspersa; inflorescentiae pauciflorae laxae, pedunculis gracillimis glabris vel glabratiss ca. 1 cm. longis; bracteae floriferae rotundato-ellipticae vel ovali-orbiculares sanguineae 3–4 cm. longae et 2.5–3.5 cm. latae, apice rotundatae vel late obtusae, basi late rotundatae et anguste breviter cordatae, glabrae vel tantum ad costam sparse minute pilosulae, reticulato-venosae, nervis lateralibus e costa angulo recto abeuntibus; perianthia 1.5–2 cm. longa sparse minute puberula vel pilosula vel fere glabra; anthocarpia matura ca. 12 mm. longa et 2–2.5 mm. lata striato-costata basi et apice angustata.—Federated Malay States: Cultivated in the Botanic Gardens, Singapore, as *Bougainvillea* Mrs. Butt, purchased from L. R. Russell, Richmond, in 1923, July 1, 1938, *R. E. Holttum* (type in Herb. Field Mus.).—British Honduras: San Antonio, Corozal District, March, 1933, *Lundell* 1900.—Guatemala: Antigua, Dept. Sacatepéquez, 1938–39, *Standley* 83058.—

Honduras: Lancestilla, Dept. Atlántida, in 1929, *A. M. Chickering* 193.—Costa Rica: San José, in 1932, *Manuel Valerio* 191.—Peru: La Victoria, Rio Amazonas, Dept. Loreto, in 1929, *Llewelyn Williams* 2513. Fortaleza, Dept. Loreto, in 1929, *Williams* 4324.

The proposed species, which presumably is of Brazilian origin, but in rather recent years has become well known in cultivation in many parts of the earth, has usually been considered a form of *B. glabra* Choisy, the commonest and best known of horticultural Bougainvilleas, long in cultivation in most tropical regions, to which it was carried from Brazil. Technically *B. glabra* may be separated from *B. Buttiana* by its scant pubescence, uniformly much narrower leaves, and always relatively narrower and usually acute or at least distinctly acutish bracts, which have a rather unpleasant magenta color. Horticulturally the differences are much greater, and they are discussed in the following account published by the senior author in the *M. A. H. A. Magazine* in April, 1941 (Kuala Lumpur, vol. 11, no. 2):

“During the past three years I have made various enquiries about the horticultural history of the beautiful crimson *Bougainvillea* Mrs. Butt, now so well known in almost all parts of the tropics. The information obtained is gathered together here, and I wish to express my thanks to correspondents who have so kindly answered my questions and thus enabled me to write these notes. The story is not complete, and if any reader has further information to offer, I shall be glad to have it.

“. . . I am personally satisfied that Mrs. Butt should be regarded as a species quite distinct from *Bougainvillea spectabilis* and *B. glabra*. However, this is not the place to publish a new botanical name and description. In the meantime gardeners will doubtless be quite satisfied with the name Mrs. Butt which they have known for so long.

“How long this *Bougainvillea* has been cultivated in South America is unknown. The first recorded item of history is that Mrs. R. V. Butt, of Trinidad, visiting Colombia in 1910, found a plant in a garden near Cartagena, and brought cuttings to Trinidad. It was found easy to propagate, and was soon distributed to the other West Indian Islands, though I do not know how soon the name Mrs. Butt came into general use.

“In October 1916 the U. S. Department of Agriculture recorded the introduction from British Guiana to Florida of a crimson-flowered *Bougainvillea* of which sufficient information is given to make its

identity with Mrs. Butt certain, though that name is not mentioned. But it seems that the species had been introduced to Florida at an even earlier date. I am indebted to Professor Mowry of the College of Agriculture, Gainesville, Florida, for this next item of history. Professor Mowry was informed by Mr. N. A. Reasoner, of Reasoner's Tropical Nurseries, that his father, the late Mr. E. N. Reasoner, introduced Mrs. Butt to Florida about 1912 or 1913, and that he was selling plants at \$5 each for two years before he included it in his 1917 catalogue, under the name 'Crimson Lake:' this catalogue was issued towards the end of 1916, about the same time as the Department of Agriculture's importation. Professor Mowry kindly sent me a dried specimen of 'Crimson Lake,' as grown in Florida, and it is quite identical with our Mrs. Butt.

"It seems that this *Bougainvillea* did not cross the Atlantic until after the 1914-1918 war, and then it was introduced to Europe both as Mrs. Butt and as Crimson Lake. Messrs. Lemoine & Son of Nancy (France) informed me that they imported Crimson Lake from Philadelphia in 1920. About the same time Mrs. Butt traveled from the West Indies to Kew, and some years later Messrs. Lemoine obtained Mrs. Butt from an English source. They wrote to me in 1937 that they thought the two might be identical, but were not sure. The early accounts in the *Gardeners Chronicle* quoted small differences between the two; these differences were, I think, due to more or less intense coloration under exposure to stronger or weaker light, and differences in leaves due to different size of plants.

"The next item of history comes from India. Mr. Percy-Lancaster, Secretary of the Royal Agri-Horticultural Society of India, in a letter dated November 4th, 1938, informed me that a *Bougainvillea* resembling Mrs. Butt arrived in India direct from the West Indies in 1920, having been introduced by a Mr. Tomlinson of the Eastern Bengal Railway. Mr. Percy-Lancaster gave the name 'Scarlet Queen' to this plant. He writes: 'The coloured bracts are slightly darker than in Mrs. Butt but the actual flower is malformed so that instead of there being three white or cream flowers in the bracts, there are merely little bunches of anthers. In growth and foliage these plants are identical.' The original Scarlet Queen, so far as I know, has never been introduced to Malaya, but it gave rise at Madras in 1932 to a bud-sport with orange bracts which was called 'Louis Wathen:' of this, more is written below. Louis Wathen is well known in Malaya. It would be interesting to have the earlier history of Scarlet Queen, which must surely have had a cultural origin

independent of Mrs. Butt, though the two are certainly varieties of one species.

“Mrs. Butt was soon distributed from Kew to the eastern tropics and to Africa. It reached Singapore in 1923, and probably the bulk of the countless plants now in Malaya were derived from that single individual, brought here by Mr. Burkill. Now it is in every garden, and its virtues as a pot plant are known to all. It is often called Madam Butt or Clara Butt, though the latter distinguished lady has no connexion with it.

“In 1931, in the garden of Mrs. McLean of Trinidad, a plant of Mrs. Butt produced a branch with apricot-orange instead of crimson bracts. This was shown to Mr. R. O. Williams, who propagated it and named it ‘Mrs. McLean.’ The next year, the variety Scarlet Queen did the same thing in Madras, in the garden of Mrs. Wathen, and the orange variety so produced was named ‘Louis Wathen’ by Mr. B. S. Nirody, Honorary Secretary of the Madras Agri-Horticultural Society. Mr. Nirody actually said that Louis Wathen was derived from Mrs. Butt; but Mr. Percy-Lancaster, in his letter on Scarlet Queen informed me that the latter variety was concerned. This statement is borne out by the fact that Louis Wathen can be distinguished from Mrs. McLean by its imperfect flowers; I know of no other distinction between the two. To be quite accurate, Louis Wathen does occasionally have a perfect flower, which one may see as a little cream-coloured star among the orange bracts; but most of the flowers lack the white star-like end entirely, the remainder consisting of an inconspicuous group of stamens protruding from a short tube.

“Both Louis Wathen and Mrs. McLean were soon introduced to Malaya, the former at least on more than one occasion, and both are now almost as common as Mrs. Butt. I think that most people do not realize the distinction between the two varieties; I did not notice it myself till it was pointed out to me by Dr. Herklots of Hong Kong, and I know of no place where it has appeared in print.

“The orange variety of Mrs. Butt has also received other names. Messrs. L. R. Russell & Co. received an Award of Merit from the Royal Horticultural Society (London) in 1934 for ‘Orange King,’ the origin of which was not stated but its identity with Mrs. McLean seems to be unchallenged. Then it seems that in Florida a similar transformation of Mrs. Butt took place, and the result was known as ‘Pretorius.’ I have, however, no authentic information on this point and should be glad to have such if any reader can supply it.

“Mrs. Butt, like *Bougainvillea peruviana*, is evidently native of more tropical regions than the original purple Bougainvilleas, which were found in the south of Brazil, on the borders of the tropics. It has also a quite distinct habit, with its stronger, more open growth, very broad leaves, and close bunches of flowers. I need not here describe in detail its many well known qualities, but will point out two facts which have not, so far as I know, appeared in print.

“The bracts of Mrs. Butt and its derivatives turn from crimson or orange when young to purple or mauve as they get older; but the bracts of the orange varieties (var. *lateralitia* and hybrids) of the older Bougainvilleas start purple when they are young and pass through red to orange when they are old. The other feature of Mrs. Butt is one of which gardeners should beware. It will not stand hard pruning back so that no leafy shoots are left. The old purple Bougainvilleas can be cut back almost to the ground, and they rise again more vigorous than before; but Mrs. Butt will not stand this rough treatment.”

A communication from Mr. Holttum concerning the plant here described as a new species gives the following information derived from living plants: “I suggest that the chief distinguishing features from *B. glabra* are the broad base of the leaf (notably of the large leaves on the main branches), and the yellow pigment present in the bracts (combined of course with a purple pigment) giving the crimson, not magenta colour. The thorns are also I think straighter than those of *B. glabra*. The whole habit of the plant is different, especially the close grouping of the flowers and reduction of the leaves subtending the inflorescences, but this is difficult to define clearly so as to show the distinction from *B. glabra*.”

The crimson form of *B. Buttiana* is now a common plant in Florida gardens, and is frequent in Central America, although there much less common than typical *B. glabra*. The orange forms of the species are still rather infrequent in America, so far as one may judge from scattered reports and from observation.

PORFULACACEAE

Montia calcicola Standl. & Steyerm., sp. nov.—Perennis stolones elongatos gracillimos sparse foliatos emittens, glabra, caulis usque 10 cm. longis, prostratis vel procumbentibus simplicibus; folia omnia caulina 3-5-juga opposita, plerumque (petiolo inclusu) 2-2.5 cm. longa, oblanceolata, 3-5 mm. lata, obtusa vel subacuta, basi in petiolum marginatum attenuata; flores axillares, in axillo

1-3, pedicellis usque 8 mm. longis in statu fructifero recurvis; sepala pallide viridia rotundo-ovata 1.5 mm. longa, apice rotundata, capsula breviora; petala pallide rosea sepalis aliquanto longiora; capsula subglobosa 2 mm. longa 3-valvis; semina 2-3 rufescents nigra 1 mm. diam. minutissime reticulata.—Guatemala: Dept. Huehuetenango: Cerro Chémal, summit of Sierra de los Cuchumatanes, in woods of *Juniperus Standleyi*, alt. 3,700-3,800 meters, August 8, 1942, Julian A. Steyermark 50308 (type in Herb. Field Mus.). On limestone bluffs, alpine area of Tojquía, Sierra de los Cuchumatanes, 2,700 meters, August 5, 1942, Steyermark 50127.

This is referable to the genus *Montia*, as limited by Rydberg in *North American Flora*, and is the only plant of that limited group known from Central America. It is not particularly close to any of the North American species described by that author. The only other Central American species of *Montia* is the following:

Montia mexicana (Rydb.) Standl. & Steyermark, comb. nov.
Limnia mexicana Rydb. N. Amer. Fl. 21: 309. 1832.—This has been collected several times during the past few years in the Sierra de los Cuchumatanes, Huehuetenango, Guatemala, growing in alpine areas upon limestone.

Oreobroma megarhizum (Hemsl.) Standl. & Steyermark, comb. nov.
Calandrinia megarhiza Hemsl. Diag. Pl. Mex. 23. 1879. *Claytonia megarhiza* Kuntze, Rev. Gen. 57. 1891. *O. mexicanum* Rydb. N. Amer. Fl. 21: 326. 1932.—The Guatemalan species, rather strangely, is omitted by Rydberg in his account of the Portulacaceae in *North American Flora*.

CARYOPHYLLACEAE

Arenaria altorum Standl. & Steyermark, sp. nov.—Herba perennis adscendens, radice crassa sublignescente, caulis pluribus gracilibus 6-14 cm. longis simplicibus vel superne pauciramosis fere ubique minutissime puberulis bisulcatis; folia remota linearia patentia subcarnosa sessilia 10-18 mm. longa vix ad 1 mm. lata, apice attenuato-acuta, glabra, prope basin ciliata; flores axillares vel subpaniculati pauci vel numerosi, pro parte terminales, pedicellis rectis usque ad 8 mm. longis minutissime et fere microscopice puberulis erectis vel suberectis; sepala 3-3.5 mm. longa glabra vel ad carinam microscopice puberula acuta vel subulato-acuminata, apicibus breviter subrecurvis, late inconspicue carinata, prope carinam viridia, mar-

ginibus albis scariosis; petala alba integra sepalis paullo longiora; stamina petala aequantia; styli 3; capsula 4 mm. longa lucida in valvulas 3 breves emarginatas fissa.—Guatemala: Dept. Jalapa: Dry open ground near Minas de Croma, Potrero Carrillo, 13 miles northeast of Jalapa, alt. 1,500–1,700 meters, December 12, 1939, Julian A. Steyermark 33091 (type in Herb. Field Mus.). Dept. Huehuetenango: Dry southwest-facing slopes of Sierra de los Cuchumatanes, between Chiantla and Patio de Bolas, alt. 2,100–2,500 meters, July 6, 1941, Steyermark 48227.

Related to *A. Bourgaei* Hemsl. of Mexico, which has generally much longer petals and very obtuse sepals.

***Arenaria chiapensis* Standl. & Steyermark, sp. nov.**—Perennis ut videtur caespitosa et suberecta, caulis 10–14 cm. longis simplicibus vel pauciramosis, ramis suberectis dense pilis rigidulis patentibus hispidulis, dense foliatis; folia suberecta vel valde adscendentia insigniter imbricata rigida subcoriacea lineari-lanceolata 6–10 mm. longa usque ad 2 mm. lata subulato-acuminata dense ciliata, subtus interdum praesertim in statu juvenili hispidula, marginibus cartilagineo-incrassatis, 1-nervia, costa subtus saepe retrorso-hispida; flores axillares numerosi, pedicellis usque ad 9 mm. longis crassiusculis densissime pilis patentibus hispidulis; sepala lanceolata ca. 5.5 mm. longa subcoriacea subulato-acuminata, exteriora basi ciliata, omnia dorso saltem ad costam hispidula, costa crassiuscula elevata; petala alba 7 mm. longa vel paullo ultra integra; stamina sepala aequantia et petalis multo breviora; styli 3.—Mexico: Chiapas: In 1864–70, Dr. Ghiesbreght 871 (type in Herb. Field Mus.).

In general appearance much like *A. lycopodioides* Willd., and distributed as *A. decussata* Willd., a synonym of that species of Mexico and Guatemala. In *A. lycopodioides* the pubescence is closer and much less abundant, and the sepals are glabrous.

***Arenaria guatemalensis* Standl. & Steyermark, sp. nov.**—Perennis laxe ramosa, caulis interdum 1 m. longis et ultra et subscendentibus vel e rupibus pendentibus, pilis brevibus patentibus vel subreflexis sat dense puberulis, internodiis vulgo elongatis, saepe foliis multo longioribus; folia sessilia vel brevissime petiolata patentia herbacea lineari-lanceolata usque elliptico-lanceolata 1.5–3.5 cm. longa 2–8 mm. lata acuta, basi obtusa vel subacuta, supra dense minute puberula, subtus ad costam minute hispidula aliter glabra vel interdum puberula, 1-nervia, marginibus non incrassatis; flores axillares, pedicellis gracilibus foliis vulgo multo longioribus dense minute

puberulis; sepala ca. 5 mm. longa, exteriora lanceolata vel linearilanceolata attenuato-acuminata minute hispidula, interiora latiora ad costam tantum hispidula, marginibus scariosis albis; petala integra ca. 8 mm. longa sepalis semper longiora; stamna sepala subaequantia; styli 3; capsula 5–6 mm. longa 3-valvata, valvis profunde bilobis.—Guatemala: Dept. San Marcos: Sprawling over thickets of upper slopes, Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, alt. 2,500–3,000 meters, February, 1940, Julian A. Steyermark 36268 (type in Herb. Field Mus.); Puente de Nahuatl-aa, near San Marcos, 2,280 meters, Standley 66214. Dept. Sacatepéquez: Volcán de Agua, J. R. Johnston 226; Standley 65174. Dept. Jalapa: Montaña Miramundo, 2,000 2,200 meters, Steyermark 32812. Dept. Chimaltenango: Santa Elena, Johnston 418; Standley 60982. Dept. Quezaltenango: Volcán de Santa María, 1,500 3,000 meters, Steyermark 34011.

The species is known also from Costa Rica and Panama (Volcán de Chiriquí), and probably occurs in southern Mexico. The plant has been much confused with *A. megalantha*, not only recently but by Williams in his monograph of the genus, where several distinct plants evidently are confused under his treatment of *A. megalantha*, as he himself suggests may be the case. *A. megalantha*, which grows in southern Mexico and in Guatemala, differs from *A. guatemalensis* in its broader, ovate leaves, these with much thickened and long-ciliate margins, in the denser and longer hairs of the stems, and in the long-pilose pedicels. A Mexican variant of *A. guatemalensis* is the following:

***Arenaria guatemalensis* var. *ensifolia* (Rohrb.) Standl. & Steyermark, comb. nov.** *A. megalantha* var. *ensifolia* F. N. Williams, Journ. Linn. Soc. Bot. 33: 380. 1898. *A. lanuginosa* var. *ensifolia* Rohrb. Linnaea 37: 264. 1871–72.—This differs but little from Guatemalan plants, unless in the minute pubescence, rather large flowers, and narrow leaves.

***Cerastium Juniperorum* Standl. & Steyermark, sp. nov.**—Ut videtur perennis, caulis solitariis vel paucis erectis vel decumbentibus 20–35 cm. longis dense breviter pilis patentibus viscidovillosulis, internodiis plerumque foliis multo longioribus, simplicibus; folia sessilia patentia herbacea oblongo-lanceolata 2.5–3.5 cm. longa 5–8 mm. lata acuta, apice calloso-incrassato, basi obtusa, utrinque sat dense pilis brevibus patentibus pubescentia, 1-nervia; cymae terminales pauciflorae, pedicellis ut videtur rectis gracillimis

usque ad 3.5 cm. longis dense viscido-pubescentibus; sepala 7–8 mm. longa oblongo-lanceolata viridia scarioso-marginata viscidovillosula; petala alba 1 cm. longa sepalis bene longiora; capsula ignota.—Guatemala: Dept. Huehuetenango: In rocky wooded ravine under *Juniperus Standleyi*, alpine areas in vicinity of Tunimá, Sierra de los Cuchumatanes, alt. 3,400–3,500 meters, July 7, 1942, Julian A. Steyermark 48413 (type in Herb. Field Mus.); also no. 48389 from the same region.

Perhaps this is only an extreme form of *C. guatemalense* Standl., but in the ample material of that species now at hand the calyx is smaller, only 5 mm. long, and the caulin leaves are linear or lance-linear, and proportionately much narrower than in *C. Juniperorum*.

Drymaria minuscula Standl. & Steyermark, sp. nov.—Annua erecta 1–3 cm. alta dense a basi ramosa glabra, caulis gracilis teretibus pallidis; folia basalia rosulata oblanceolato-spathulata usque ad 8 mm. longa obtusa, basin versus attenuata, foliis caulinis linear-oblanceolatis aequilongis obtusis sessilibus, basin versus attenuatis, supremis bracteiformibus minutis; inflorescentia repetitive dichotoma dense multiflora, floribus parvis brevissime pedicellatis; sepala 1.5–2 mm. longa obtusa erecta apice interdum paullo excura obscure carinata; petala minuta vel nulla, sepalis multo breviora; stamina 5 sepalis multo breviora; stylus brevis, ramis 3 brevibus.—Guatemala: Dept. Huehuetenango: On rocky limestone outcrops under *Juniperus Standleyi*, alt. 3,700 meters, vicinity of Chémal, summit of Sierra de los Cuchumatanes, August 8, 1942, Julian A. Steyermark 50243 (type in Herb. Field Mus.).—Mexico: Ajusco, State of Mexico, August, 1910, C. R. Orcutt 3724.

Among all Mexican and Central American *Drymaria* species, this may be recognized at once by its greatly reduced size and the very dense inflorescence composed of many crowded subsessile flowers.

RANUNCULACEAE

Clematis caleoides Standl. & Steyermark, sp. nov.—Frutex scandens, in sicco saepe nigrescens, caulis glabris, novellis sparse breviterque pilosis; folia vulgo 5–7-foliolata, foliolis longipetiolulatis, crasse chartaceis vel subcoriaceis ovatis, plerumque 6–12 cm. longis et 3.5–7.5 cm. latis, acuminatis vel acutis, basi late rotundatis vel interdum subprofunde cordatis, in toto margine denticulatis vel crenato-dentatis, dentibus utroque latere pluribus, rare subintegris, supra glabris vel tantum ad nervos pubescentibus, subtus paulo

pallidioribus, lucidis, sparse praesertim ad nervos pilosulis vel in statu adulto saepissime glabris; flores dioeci laxe cymoso-paniculati albi longipedicellati, pedicellis laxe tomentulosis; sepala elliptica vel oblongo-elliptica ca. 8 mm. longa utrinque dense sericeo-tomentosa; filamenta crassiuscula 4-5 mm. longa glabra, antheris fere 1 mm. longis.—Guatemala: Dept. Chimaltenango: In dense *Cupressus* forest, Cerro de Tecpám, region of Santa Elena, alt. 2,700 meters, December, 1938, *Paul C. Standley* 58732 (type in Herb. Field Mus.). Dept. El Progreso: Sierra de las Minas, Volcán Santa Luisa, 3,000 meters, *Steyermark* 43581. Dept. Sololá: Volcán de Santa Clara, 2,100-3,000 meters, *Steyermark* 46889. Dept. Huehuetenango: Cerro Huitz, Sierra de los Cuchumatanes, 1,500-2,600 meters, *Steyermark* 48658. Dept. San Marcos: Volcán de Tajumulco, *Steyermark* 35803, 36955; Volcán de Tacaná, 2,500-3,000 meters, *Steyermark* 36185.

Although this vine is rather widely distributed in the central and western highlands of Guatemala, we have found it in fertile state but once. It is readily recognized by its foliage, the leaflets being very lustrous, almost or quite glabrous, and with numerous small, regularly spaced teeth. Its relationship is with *C. dioica* L. and *C. grossa* Benth., the only other species known in Central America, both of which have leaflets that do not possess these characters.

CRUCIFERAE

Cardamine eremita Standl. & Steyermark, sp. nov.—*Perennis omnino glabra erecta vel adscendens plus minusve caespitosa, caudice saepe laxe ramoso gracili, caulis paucis 8-20 cm. longis pauci-foliatis; folia plerumque radicalia 2-4 cm. longa ca. 7-foliolata, foliolis vel segmentis parvis crassis lineari-ob lanceolatis vel ob lanceolatis 3-7 mm. longis vix ad 2.5 mm. latis, obtusis vel obtusissimis, basin versus sensim attenuatis, integris; folia caulina basalibus conformia petiolata, flore infimo vulgo basi foliaceo-bracteato; racemi pauci- vel submultiflori in statu fructifero usque 7 cm. longi, floribus interdum subsecundis, pedicellis gracilibus adscendentibus sub fructu 5-9 mm. longis; sepala oblonga 2.5 mm. longa apice rotundata albo-marginata et purpureo tincta; petala alba spatulata 5-6 mm. longa; siliquae lineares 20-27 mm. longae vix 1 mm. latae basi paullo attenuatae, apicem versus longiuscule sensim attenuatae, stylo persistente 1-1.8 mm. longo; semina pauca brunnescens marginata.*—Guatemala: Dept. Huehuetenango: Between Tojquiá and Caxín bluff, summit of Sierra de los Cuchumatanes, alt. 3,700 meters, on dry rocks on grassy slopes covered by *Pinus Montezumae* var.

rudis, August 6, 1942, Julian A. Steyermark 50143 (type in Herb. Field Mus.). Alpine areas of Tunimá, Sierra de los Cuchumatanes, 3,800-3,500 meters, Steyermark 48291, 48416.

This appears to be an isolated species, with little resemblance to any other known from Central America or Mexico. It has some resemblance to certain species of *Arabis*, such as *A. lyrata*, and the seeds are similar to those of that species, but they are just as much like those of various *Cardamine* species, and it is believed that the plant, because of its general appearance and pinnatisect leaves, is better referred to the latter genus.

Cardamine jejuna Standl. & Steyermark, sp. nov.—*Annua* *pumila* *erecta* e *radice longa tenui*, *caulibus gracillimis simplicibus* 1-foliatis vel nudis 3-4-floris glabris; *folia radicalia* 1.5-2.5 cm. *petiolo inclusa longa*, vulgo 3-foliolata interdum 5-foliolata vel simplicia, foliolis lateralibus petiolulatis, terminali longipetiolulata, 3-6 mm. longis et aequilatis obtusis vel apice rotundatis, basi truncatis vel rotundatis integris vel saepius breviter 3-lobulatis, lobis mucronatis, foliolis subtus glabris, supra interdum hispidulis; *racemi breves laxi*, *pedicellis insigniter inaequalibus*, usque 13 mm. longis filiformibus; *sepala pallide viridia obovato-ovalia* 2 mm. longa apice rotundata pallido-marginata glabra; *petala alba* 3 mm. longa late obovato-spathulata; *siliquae glabrae anguste lineares* 2.5 cm. longae 0.7 mm. latae, basi breviter attenuatae, apice in rostrum fere 5 mm. longum sensim attenuatae, stylo 1.5 mm. longo. ---Guatemala: Dept. Huehuetenango: Forested summit, Cerro Pixpix, above San Ildefonso Ixtahuacán, Sierra de los Cuchumatanes, alt. 2,800 meters, August 15, 1942, Julian A. Steyermark 50569 (type in Herb. Field Mus.).

This diminutive but normally developed plant belongs to the highly variable and perplexing group containing such species as *C. flaccida* Cham. & Schlecht. and *C. flexuosa* With. It resembles *C. flexuosa* var. *debilis* (Don) O. E. Schulz, as that is represented in the mountains of the Dominican Republic, but is erect rather than weak and prostrate or procumbent. It is probably a local species isolated on the summits of the Cuchumatanes, where so many other endemic alpine plants have been found.

Rorippa mexicana (Moc. & Sessé) Standl. & Steyermark, comb. nov. *Nasturtium mexicanum* Moc. & Sessé ex DC. Reg. Veg. Syst. 2: 193. 1821.

CAPPARIDACEAE

Crataeva Tapia L. var. **glauca** (Lundell) Standl. & Steyermark, stat. nov. *C. glauca* Lundell, Bull. Torrey Club 69: 389. 1942.

LEGUMINOSAE

Dalbergia Funera Standl., sp. nov.—Arbor 6-metralis, ramulis glabris vel glabratibus; foliola 5–7 longiuscule petiolulata subcoriacea late ovalia vel suborbiculata, plerumque 3.5–6.5 cm. longa et 2–4.5 cm. lata, apice late rotundata et breviter emarginata, basi rotundata, viridia lucida glabra, venis prominentibus, subtus pallida glabra vel primo sparse breviter pilosula; racemi ut videtur pauciflori atque laxi; legumen oblongum vel spathulato-oblongum 4–5.5 cm. longum 1.5 cm. latum, apice rotundatum et apiculatum, basi acutum, breviter stipitatum, densissime brunneo-tomentulosum 1-spermum.—Salvador: Dept. Chalatenango: La Reina, November, 1928, *Salvador Calderón* 2479 (type in Herb. Field Mus.).

Sterile specimens from the Oriente of Guatemala perhaps represent the same species, which is noteworthy for its short and very broad leaflets, broadly rounded at the apex.

Inga Barbourii Standl., sp. nov.—Arbor 30-metralis, trunco 40 cm. diam., ramulis gracilibus dense pilis patentibus vel adscendentibus fulvis brevibus hispidulis, sat dense foliatis; folia parva petiolo inclusa 7–10 cm. tantum longa, petiolo gracili 8–10 mm. longo dense pubescente nudo; rhachis 3–6 cm. longa anguste sed manifeste alata fulvo-hispida, ala vix ultra 2 mm. lata saepe revoluta, glandulis parvis rotundis sessilibus; foliola 4–5-juga lanceolato-oblonga vel anguste elliptico-oblonga 3–9 cm. longa 1.5–2.3 cm. lata, acuta et breviter mucronata, basi sessili obtusa, supra in sicco luteo-viridia, sparse hispidula, ad costam dense breviter hispidula, subtus paullo pallidiora ad costam nervosque adpresso-hispida, aliter sparse hispidula vel fere glabra; flores (non visi) ut videtur capitati, pedunculo 2 cm. longo; legumen late lineare valde compressum 5.5 cm. longum 8–12 mm. latum, apice subtruncatum, sessile, basi late rotundatum, sparse subadpresso hispidulum vel glabratum, marginibus aequaliter incrassatis, dorso 3-costatum.—Costa Rica: Prov. Cartago: One-half mile south of Pavones road, 4 miles east of Turrrialba, alt. 900 meters or more, on north slope in clay loam in rain forest, May 21, 1943, *William R. Barbour* 1008 (U. S. Forest Service 95013; type in Herb. Field Mus.).

Local name "guaba." It is suspected that the small pods, which are somewhat constricted between the four seeds, may be somewhat atypical, and perhaps not completely developed. Like most *Inga* species, this one is difficult to place in the treatment by Britton and Rose in *North American Flora*, but it has been carefully compared with all the species listed there, and with the Central American ones more recently described, and obviously agrees with none of them. The leaves particularly, which, in spite of their small size, appear to be fully grown, are decidedly unlike those of any other Central American *Inga*.

***Lonchocarpus modestus* Standl. & Steyermark, sp. nov.**—*Fru-*
tex, ramulis ferrugineo-strigillosis; foliola 3–5 et 3–5 mm. longe petio-
lulata firme membranacea 5–12 cm. longa 2.5–5 cm. lata, acuminata,
basi obtusa vel subacuta, glabra, venulis subtus prominulis arcte
reticulatis; racemi axillares breves pauciflori 2.5 cm. longi, rhachi
ferrugineo-puberula, pedicellis usque 3 mm. longis, bracteis linearis-
filiformibus; calyx campanulatus 3.5–4 mm. longus punctatus cili-
atus, basi acutus, fere glaber sed pilis paucis minutis lucidis con-
spersus, lobis angustis tubum fere aequantibus; petala intense rosea
glabra punctata, vexillo lato 8 mm. longo; ovarium subsessile lineare
adpresso-pilosum.—Guatemala: Dept. Izabal: Bay of Santo Tomás,
 between Escobas and Santo Tomás, at sea level, April, 1940, *Julian*
A. Steyermark 39238 (type in Herb. Field Mus.).

The small flowers and the general appearance of the foliage indicate a probable relationship with *L. minimiflorus* Donn. Smith, but the fruit, when available, may show that the relationship is quite different. Very few Central American species of the genus have quite glabrous petals.

***Lonchocarpus phlebophyllus* Standl. & Steyermark, sp. nov.**—*Arbor parva, ramulis dense puberulis; folia longipetiolata, foliolis*
2–4 mm. longis petiolulatis oblongis vel ovali-oblongis coriaceis 3.5–8
cm. longis 1.8–3.5 cm. latis, apice rotundatis et vulgo subemarginatis,
basi obtusis vel rotundatis, supra griseo-viridibus puberulis, costa
nervisque insigniter impressis, subtus dense pilis brevibus patentibus
pilosus, nervis lateralibus numerosis maxime elevatis et conspicuis,
venulis prominentibus arcte reticulatis; legumen 1-spermum ellip-
tico-oblongum vel oblongo-obovatum ca. 9.5 cm. longum atque
4 cm. latum, apice rotundatum vel obtusum, basi longiattenuatum
1 cm. longe stipitatum, dense brunneo-tomentulosum, valvis ad semen
valde incrassatis, marginibus tenuibus acutis.—Guatemala: Dept.

Chiquimula: Between Ramírez and Cumbre de Chiquimula, on the road between Chiquimula and Zacapa, alt. 400–600 meters, October, 1940, *Paul C. Standley* 74569 (type in Herb. Field Mus.). Near the divide on the road from Zacapa to Chiquimula, 660 meters, *Standley* 73747.

A member of the group of *L. rugosus* Benth., but in that the leaflets are more numerous, usually more abundantly pubescent, and less conspicuously nerved, while the fruit is thinner and narrower.

Mimosa zacapana Standl. & Steyerl., sp. nov.—Frutex 1–1.5 m. altus, ramis sparse hirtellis vel glabratis aculeis paucis patentibus crassiusculis armatis; stipulae subulatae; folia breviter petiolata, petiolis vulgo 1–1.5 cm. longis, pinnis 1-jugis; foliola 6–9-juga oblonga 6–11 mm. longa 2.5–3.5 mm. lata obtusa vel subacuta, subapiculata, subcoriacea, adpresso setuloso-ciliata, supra glabra, subtus sparse breviter setulosa et saepe sparse pilosula vel fere omnino glabra, costa plus minusve excentrica; pedunculi axillares solitarii 3–4.5 cm. longi gracillimi, glabri vel glabratii, floribus capitatis, capitulis densis globosis, floribus glabris, corolla interdum ad apices loborum puberula, 2.5 mm. longa; stamina lobis corollae isomera; legumen ca. 3 cm. longum 7 mm. latum, paullo inter semina constrictum, dense pubescens, ad margines setis paucis parvis armatum, valvis quoque interdum sparse breviter setulosis, seminibus ca. 4.—Guate-mala: Dept. Zacapa: Rocky slopes near Santa Rosalía, alt. 250–300 meters, October, 1939, *Julian A. Steyermark* 29018 (type in Herb. Field Mus.). Vicinity of Río Hondo, alt. 250–350 meters, *Steyermark* 29377. Baños de Santa Marta, north of Zacapa, 200 meters, *Standley* 73901.

Related to *M. caerulea* Rose of Mexico, but in that the leaflets are longer and relatively narrower, and the legume glabrous.

Rhynchosia jalapensis Standl. & Steyerl., sp. nov.—Volubilis, herbacea vel inferne suffrutescens, caulis subangulatis dense velutino-pilosulis; stipulae lanceolato-oblongae brunneae deciduae; foliola 3 late oblique ovata vel rhombica vel fere orbicularia 4–9.5 cm. longa 2.5–6.5 cm. lata, acuta vel abrupte breviter acuminata, basi rotundata, supra velutino-pilosula, subtus densius pilosula et glandulis lutescentibus sat dense conspersa; racemi folia aequantes vel longiores multiflori, bracteis lanceolatis caducis, pedicellis usque 3 mm. longis; calyx 5 mm. longus dense pilosulus, lobis lanceolato-attenuatis tubum subaequantibus, infimo paullo longiore; corolla 9–10 mm. longa, vexillo angusto extus dense pubescente; legumen

anguste oblongum ca. 3 cm. longum et 1 cm. latum, acutum et longirostratum, basi acutum, inter semina vix constrictum, dense velutino-pubescent; semina ovalia vix compressa 6–7 mm. longa laete coccinea.—Guatemala: Dept. Jalapa: Rocky slopes, between Jalapa and San Pedro Pinula, alt. 1,400 meters, December, 1939, Julian A. Steyermark 32945 (type in Herb. Field Mus.).

Here probably belongs also *Tuerckheim* II.1609 from Cobán, Alta Verapaz. In its bright red seeds this Guatemalan plant recalls *R. pyramidalis* (Lam.) Urban, but in that the seeds are scarlet and black.

OXALIDACEAE

Oxalis minarum Standl. & Steyermark, sp. nov.—Perennis acaulis bulbifera, bulbo 10–11 mm. diam. subgloboso, squamis membranaceis ad margines scariosis 9–10 mm. longis, costa brunnea; folia omnia basalia ca. 5–6, palmatim trifoliolata; foliola profunde biloba, lobis divergenti-adscendentibus 2.5–5.5 cm. longis 5–12 mm. latis, sensim ad apicem rotundatum vel obtusum angustatis, glabra; petioli 15–22 cm. longi glabri; pedunculi glabri 28–30 cm. longi, floribus 15–20 simpliciter umbellatis; bracteae ovatae subito acuta 2–2.5 mm. longae; pedicelli filiformes 13–30 mm. longi superne glanduloso-pilosuli; sepala lanceolata vel oblongo-lanceolata subacuta apice callis 2 rubris lineari-oblongis vel lineari-ellipticis onusta, 4.5 mm. longa, scarioso-marginata, basi sparse glanduloso-pilosula; petala 12–13 mm. longa lilacina, sepalis duplo vel paulo ultra longiora; filamenta superne pilis adscendentibus pilosula; styli dense hirsutuli; capsula oblonga 10–12 mm. longa; semina numerosa rubescens-brunnea ovoidea, utroque latere transverse 8–10-rugosa et longitudinaliter 3-costata.—Guatemala: Dept. Zacapa: Along stream in ravine, pine-covered slopes, Sierra de las Minas, along trail between Río Hondo and summit of mountain at Finca Alejandría, alt. 1,000–1,500 meters, October, 1939, Julian A. Steyermark 29718 (type in Herb. Field Mus.).

Related to *O. morelosensis* Knuth and *O. tenuiloba* (Rose) Knuth, but differing from both in its longer leaves and peduncles, longer and broader lobes of the leaflets, more numerous flowers on longer pedicels which are glandular-pilose near the apex rather than glabrous, and in the slightly longer sepals.

BURSERACEAE

Bursera Howellii Standl., sp. nov.—Arbor 15–20-metralis, ramulis crassis fusco-ferrugineis sparse pilosis vel fere omnino glabris,

apice dense foliatis; folia parva 3.5–7 cm. longa breviter petiolata vulgo 9-foliolata, rhachi late alata, alis integris; foliola inaequaliter obovata, ovata vel ovalia plerumque 1–2.5 cm. longa et 6–15 mm. lata, apice obtusissima vel rotundata, sessilia, basi oblique obtusa vel rotundata, terminali basi cuneato-angustata, utroque latere grosse paucicrenata vel fere lobulata, interdum subintegra, supra viridia sublucida sparse puberula, subtus paullo pallidiora sparse breviter pilosula; racemi fructiferi laxi foliis paullo breviores pauciflori sparse pilosi, pedicellis ca. 4 mm. longis; fructus 2-valvis 5 mm. longus globoso-obovoideus subcompressus glaber 1-spermus; sepala persistentia 4 lanceolato-triangularia pubescentia.—Costa Rica: Prov. Guanacaste: Port Parker, July 4, 1932, *John Thomas Howell* 10244 (type in Herb. Field Mus.; dupl. in Herb. Calif. Acad. Sci.).—Colombia: Sabanilla Lagoon, August, 1932, *A. Dugand* 87; Casacoima, alt. 180 meters, September, 1936, *Dugand* 1034; Santa Rosa, near Puerto Colombia road, May, 1933, *Dugand* 418.

The Colombian material was referred by the writer to *B. graveolens* Triana & Planch., but that has much larger, acuminate leaflets. The description of *B. panamensis* Pittier suggests this species, but unless the description is very inaccurate, *B. panamensis* has larger leaflets, the terminal one acute, with abundant persistent pubescence. In *B. Howellii* the leaflets are very sparsely pubescent even from the first. The collector's notes regarding the type of *B. Howellii* are as follows: "Shrubby or becoming a tree 15–20 feet tall, the trunk slender, with smooth, purplish gray bark. Growing on rocky slope back from the beach."

TRIGONIACEAE

Trigonia rasa Standl. & Steyermark, sp. nov.—Frutex scandens elongatus, ramis gracillimis fusco-brunneis, novellis hirtellis vel puberulis, internodiis brevibus; folia inter minora 2–5 mm. longe petiolata subchartacea, lamina elliptico-oblonga usque oblongo-ovata vel ovata plerumque 4.5–8.5 cm. longa et 2.5–3.5 cm. lata, saepius longe angusteque acuminata, basi obtusa, supra glabra vel tantum ad costam puberula, subtus paullo pallidior in statu adulto fere omnino glabra, ad nervos costamque hinc inde pilis paucis rectis conspersa, nervis lateralibus utroque latere ca. 5 arcuatis; thyrsi ut videtur parvi et ad 6 cm. tantum longi, pedicellis fructiferis usque 7 mm. longis; capsula oblongo-ovoidea 1.5–2 cm. longa ca. 1 cm. lata, apiculato-acuta parce pilosa rubro-brunnescens, basi rotundata, ubique dense lenticellis elevatis pallidis conspersa.—Guatemala:

Dept. Santa Rosa: Río Panal, lower slopes of Volcán de Tecuam-burro, along the road between Cuilapa and Chiquimulilla, November 28, 1940, *Paul C. Standley* 78584 (type in Herb. Field Mus.). Dept. Retalhuleu, Río Coyote, along road 4 km. west of Retalhuleu, about 300 meters, February, 1941, *Standley* 87416 (sterile).

The only other species of *Trigonia* known from northern Central America is *T. floribunda* Oerst., which has somewhat larger capsules and larger leaves, on longer petioles and with more numerous lateral nerves.

CELASTRACEAE

Rhacoma puberula (Lundell) Standl. & Steyerl., comb. nov.
R. riparia Lundell, var. *puberula* Lundell, Carnegie Inst. Wash. Publ. 478: 213. 1937. *Myginda puberula* Lundell, Bull. Torrey Club 64: 553. 1937.

Rhacoma Standleyi (Lundell) Standl. & Steyerl., comb. nov.
Myginda Standleyi Lundell, Bull. Torrey Club 67: 618. 1940.

Rhacoma Tonduzii (Loes.) Standl. & Steyerl., comb. nov.
Gyminda Tonduzii Loes. Bot. Jahrb. 29: 98. 1900.

ACERACEAE

Acer Negundo L. var. **mexicanum** (DC.) Standl. & Steyerl., stat. nov. *Negundo mexicanum* DC. Prodr. 1: 545. 1824.

Acer Negundo L. var. **orizabense** (Rydb.) Standl. & Steyerl., stat. nov. *Negundo orizabense* Rydb. Bull. Torrey Club 40: 55. 1913.

SABIACEAE

Meliosma dives Standl. & Steyerl., sp. nov.—Frutex vel arbor usque ad 12 m. alta, ramulis primo minute pubescentibus, in statu adulto glabratiss; folia 12–15 mm. longe petiolata chartacea anguste oblanceolata vel oblongo-oblanceolata vulgo 12–18 cm. longa et 3–6 cm. lata longiacuminata, basin versus longe angustequaque attenuata, remote et inconspicue serrato-dentata vel fere integra, adulta glabra vel tantum subtus in axillis nervorum barbata, supra viridia, subtus pallidiora, nervis lateralibus ca. 10-jugis irregularibus arcuatis prominentibus; paniculae terminales et axillares laxe multiflorae plerumque 8–18 cm. longae subdense sordide pubescentes, floribus sessilibus vel breviter crasse pedicellatis; calyx 2 mm. latus, sepalis orbicularibus

vel ovato-orbicularibus, apice rotundatis, ciliatis, dorso sparse puberulis; stylus brevis ovario multo brevior; drupa in statu sicco 6–8 mm. longa subglobosa vel oboviedo-globosa glabra.—Guatemala: Dept. Suchitepéquez: Eastern slopes of Volcán de Santa Clara, above Chicacao, alt. 1,250 meters, May, 1942, Julian A. Steyermark 46773 (type in Herb. Field Mus.). Finca Mocá, Suchitepéquez, 990 meters, May, 1937, W. C. Muenscher 12451. Southern slopes of Volcán de Atitlán, Sololá, 1,000–1,250 meters, Steyermark 47920. Barrancos west of Finca Mocá, lower slopes of Volcán de Atitlán, 1,000 meters, Steyermark 47614.

A relative of *M. dentata* (Liebm.) Urban, a Mexican species that has been collected once in Guatemala (Dept. Zacapa), but in that the flowers are conspicuously pedicellate and larger, and the fruit is definitely larger than in *M. dives*.

Meliosma maxima Standl. & Steyermark, sp. nov.—Arbor 9-metralis, ramis crassis primo dense sordide pubescentibus, glabrescentibus; folia inter maxima crasse 2–3 cm. longe petiolata membranacea longe cuneato-ovata vel spathulato-ovata 40–55 cm. longa 14–20 cm. lata, apice ut videtur obtusa vel rotundata, basin versus longe anguste attenuata, integra vel subintegra, supra viridia glabra, subtus dense vel sparse velutino-pubescentia, pilis brevibus patulis sordidis, costa subtus elevata, nervis lateralibus numerosis elevatis marginem fere attingentibus; paniculae axillares usque ad 23 cm. longae laxe multiflorae sparse ramosae, ramis gracillimis sat dense breviter pubescentibus; flores ad anthesin sessiles, pedicellis in statu fructifero elongatis, albi (bene evoluti non visi); ovarium glabrum; drupa subglobosa ca. 2 cm. diam.—Guatemala: Dept. Izabal: Along stream, between Bananera and La Presa, Montaña del Mico, alt. 300 meters, March, 1940, Julian A. Steyermark 38170 (type in Herb. Field Mus.). Along trail between Morales and Lago de Izabal, Montaña del Mico, 150 meters, Steyermark 39084.

Well marked by the extremely large leaves. The relationship is probably with *M. grandifolia* (Liebm.) Urban, of Oaxaca.

MALVACEAE

Abutilon Pachecoanum Standl. & Steyermark, sp. nov.—Arbuscula, ramulis dense stellato-tomentulosis atque pilis longis mollibus patentibus indutis; folia longipetiolata rotundato-ovata magna abrupte acuminata, interdum prope apicem leviter triloba, basi profunde cordata, integra, supra viridia sparse minute stellato-

pubescentia, subtus ubique tomento stellato albido subadpresso dense induita; pedunculi axillares elongati 3-flori; calyx magnus dense minute brunneo-stellato-tomentosus atque viscido-pilosus, lobis obtusis vel acuminatis; petala 5.5 cm. longa glabra; carpella capsulae ca. 10 et 8-ovulata longicuspidata dense stellato-pilosa.—Guatemala: Dept. Quezaltenango: Damp, densely forested barranco, region of Las Nubes, south of San Martín Chile Verde, alt. 2,250 meters, January, 1941, *Paul C. Standley* 83528 (type in Herb. Field Mus.); a tree 5 meters high; corolla deep wine-red. Dept. San Marcos: Rocky slopes, vicinity of Tajumulco, northwestern slopes of Volcán de Tajumulco, alt. 2,300–2,800 meters, February, 1940, *Steyermark* 36905; shrub of 3–6 meters; leaves dull green above, gray beneath.

This is a most handsome plant, well deserving introduction into cultivation. It is marked by its very large, wine-red flowers, always borne in 3's, and by the large leaves with a very dense coat of gray stellate pubescence on the lower surface. It seems to be rare, and only one plant could be found in the type locality. It is named for Don Mariano Pacheco Herrarte, Director General de Agricultura of Guatemala.

BOMBACACEAE

Ochroma lagopus Swartz, var. *bicolor* (Rowlee) Standl. & Steyermark, stat. nov. *O. bicolor* Rowlee, Journ. Wash. Acad. Sci. 9: 165. 1919.

Quararibea guatemalteca (Donn. Smith) Standl. & Steyermark, comb. nov. *Myrodia guatemalteca* Donn. Smith, Bot. Gaz. 16: 2. 1891.

MARCGRAVIACEAE

Souroubea micrantha Standl. & Steyermark, sp. nov.—Frutex scandens vel arbor parva epiphytica omnino glabra; folia 3–4 mm. longe petiolata subcoriacea lucida obovato-oblonga vel obovato-elliptica 5.5–8 cm. longa 2.5–4 cm. lata, apice rotundata vel interdum subacuta, subtus in sicco brunnescentia versus marginem pauciglandulosa, nervis lateralibus obscuris; racemi breviter pedunculati multiflori 5–8 cm. longi 1.5 cm. lati densi, pedicellis vix ultra 5 mm. longis adscendentibus vel sursum curvatis; bracteae 3–4 mm. tantum longae pileiformes cavae ad basin floris sessiles; sepala arcte imbricata orbicularia ca. 2 mm. longa coriacea; corolla in alabastro vix ultra 3 mm. longa late ovoidea obtusissima ut videtur 3-loba;

stamina 3.—Guatemala: Dept. Izabal: Near Puerto Barrios, in *Manicaria* swamp, at sea level, April–May, 1939, *Paul C. Standley* 72793 (type in Herb. Field Mus.). Swamp near Livingston, Izabal, March, 1939, *C. L. Wilson* 362.

Most closely related to *S. triandra* Lundell, of British Honduras and Guatemala, which is reported by Lundell from Puerto Barrios. In that the flowers are larger and the bracts almost twice as long, while the much longer pedicels are divaricate or somewhat reflexed. Both are closely related to *S. exauriculata* Delp., but that is said to have the bracts inserted below rather than at the base of the flower.

GUTTIFERAE

***Clusia lusoria* Standl. & Steyermark, sp. nov.**—Arbor 15–18 metralis omnino glabra, ramulis crassis primo ferrugineis; folia magna, petiolo 1–2 cm. longo crassissimo late alato supra concavo; lamina oblongo-ovovata vel late obovato-elliptica 9–16 cm. longa 4–10 cm. lata apice late rotundata, basi cuneata vel late cuneata, supra lucida, nervis lateralibus numerosis angulo latiusculo divergentibus utrinque prominulis; inflorescentia mascula 5–11 cm. longe pedunculata 9–15-flora, medio bracteis 2 oppositis oblongis foliaceis 3–4 cm. longis sessilibus onusto, floribus sessilibus vel breviter crasseque pedicellatis, basi bracteolis 2 suborbicularibus magnis fulcratis; sepala 4 suborbicularia inaequalia, interioribus ca. 8 mm. longis; petala ovalia ca. 18 mm. longa et 8 mm. lata; stamina numerosa, antheris linearibus 5–6 mm. longis, filamentis antheris paulo brevioribus.—Guatemala: Dept. Chiquimula: Middle slopes of Montaña Norte to El Jutal, Cerro Brujo, southeast of Concepción de las Minas, alt. 1,700–2,000 meters, November 2, 1939, *Julian A. Steyermark* 30987 (type in Herb. Field Mus.). Dept. Zacapa: In cloud forest, summit of Sierra de las Minas, near Finca Planados, 2,500 meters, *Steyermark* 29972.

This species resembles *C. Salvini* Donn. Smith, but is noteworthy for the two large foliaceous bracts inserted at the middle of the long peduncle.

***Hypericum arbuscula* Standl. & Steyermark, sp. nov.**—Suffrutex erectus vulgo dense ramosissimus ca. 30 cm. altus, radice crassa recta, ramis erectis crassis densissime foliatis; folia sessilia erecta vel valde adscendentia imbricata linearia 1-nervia 6–9 mm. longa insigniter revoluta acuta coriacea sublucida epunctata; flores ad apicem ramorum pauci breviter pedicellati 5-meri; sepala anguste

lanceolato-oblonga acuta striata 5 mm. longa epunctata; petala sepalis paullo longiora anguste spathulata apice inflexa et cucullata ut videtur lutea epunctata; stamina numerosa distincta petala aequantia; styli 3 graciles longissimi usque 4 mm. longi, capsulam aequantes vel ea longiores; capsula ovoideo-oblonga vix ultra 3 mm. longa acuta subtrigona 1-locularis; semina pauca oblonga brunnea teretia fere laevia ca. 0.8 mm. longa. Guatemala: Dept. Baja Verapaz: Patal, April 11, 1941, *John R. Johnston* 1812 (type in Herb. Field Mus.); between Patal and Salamá, April 11, 1941, *Johnston* 1811. Dept. Quiché: Without definite locality, *José Ignacio Aguilar* 773.

Referable to the group (subsection) *Spachium* of R. Keller. The most nearly related Central American species is *H. uliginosum* HBK., but that is herbaceous and usually annual, and has several times shorter styles. The plants are very densely branched, with very numerous suberect leaves, and heath-like in appearance.

Hypericum calcicola Standl. & Steyermark, sp. nov.—Frutex densissime ramosus erectus et 30–60 cm. altus vel procumbens et depresso, glaber, ramis vetustioribus teretibus nigris vel nigrescentibus, novellis subteretibus rubescens, saepius dense foliatis; folia parva breviter petiolata opposita subcordata, lamina elliptica vel ovali, interdum late ovata, 5–10 mm. longa 3–6 mm. lata apice obtusa vel anguste rotundata, supra viridi epunctata, venis reticulatis manifestis, subtus pallidore sparse grosse punctata, venis nervisque laxe manifesteque reticulatis; flores ad apices ramorum solitarii breviter vel longiuscule pedicellati; sepala 4 ovato-oblonga ca. 2.5 mm. longa acuta punctata adpressa; petala rosea reflexa ca. 7 mm. longa oblonga obtusa; stamina ut videtur ca. 10, filamentis albidis; styli 3 usque 2 mm. longi ad anthesin recurvi; capsula anguste ovoidea fere 5 mm. longa pallide rosea acuta 3-sulcata 3-locularis; semina haud numerosa anguste oblonga vel subfusiformia pallida ca. 1 mm. longa. Guatemala: Dept. Huehuetenango: On limestone bluffs, common, between Tojquiá and Caxín Bluff, summit of Sierra de los Cuchumatanes, alt. 3,700 meters, August 6, 1942, *Julian A. Steyermark* 50160 (type in Herb. Field Mus.).

In general appearance this plant somewhat resembles the very densely branched forms of *Syphoricarpos microphyllus* HBK. It is noteworthy for its densely branched, completely ligneous stems, very small and numerous leaves, and solitary rose-colored flowers. We have seen no other species that at all resembles it.

Hypericum pinetorum Standl., sp. nov.—Suffrutex erectus glaber 30–90 cm. altus dense ramosus, ramis crassiusculis rigidis erectis densissime foliatis; folia sessilia linearia erecta vel suberecta imbricata 7–17 mm. longa acuta coriacea 1-nervia valde revoluta, subtus puncticulata; flores pauci subcorymbosi breviter pedicellati; sepala anguste oblongo-lanceolata 5–6 mm. longa acuminata nervosa epunctata; petala lutea obovata sepalis vix longiora epunctata; stamina numerosa distincta petalis breviora; styli 3 vix 2 mm. longi; capsula obtuse trigona oblongo-lanceolata 4 mm. longa acuta vel attenuata brunnea 1-locularis; semina numerosa ellipsoidea brunnescentia ca. 0.6 mm. longa.—Honduras: Dept. Comayagua: Open pine forest, alt. 1,080–1,400 meters, near Siguatepeque, February, 1928, *Paul C. Standley* 55880 (type in Herb. Field Mus.). In pine forest, El Achote, near Siguatepeque, 1,500 meters, *Standley* 56130. Wet pasture, plains near Siguatepeque, 1,050 meters, *T. G. Yuncker, R. F. Dawson & H. R. Youse* 5569.

This is closely related to *H. arbuscula*, described above, but in that the styles are several times as long. The Honduran collections were determined originally with some uncertainty as *H. denticulatum* HBK., but that Mexican plant has denticulate leaves (they are entire in *H. pinetorum*) and is essentially herbaceous.

Rheedia macrantha Standl. & Steyerm., sp. nov.—Arbor alta, trunco 15–20 cm. diam. et ultra, omnino glabra, ramulis plus minusve tetragonis vel sulcatis in sicco lucidis; folia crasse 1–2 cm. longe petiolata magna coriacea, lamina elliptico-oblonga vel lanceolato-oblonga 14–24 cm. longa 4.5–8 cm. lata acuminata, basi cuneata vel obtusa, lucida, subtus pallidiore, costa utrinque elevata, nervis lateralibus numerosissimis utrinque prominentibus; flores viridescentes magni in axillis vel ad nodos defoliatos dense fasciculati, pedicellis gracilibus 2.5–4.5 cm. longis, alabastris 8–10 mm. diam.; sepala suborbicularia 8–10 mm. longa apice late rotundata; petala late ovalia vel fere orbicularia 8–10 mm. longa; stamina in flore masculo numerosa, filamentis crassiusculis basin versus dilatatis; ovarium profunde sulcatum, stigmate crasse disciformi ca. 3 mm. lato; bacca ellipsoidea 6 cm. longa 3.5 cm. lata, basi obtusa, apicem versus contracta.—Guatemala: Dept. Alta Verapaz: Wet mixed forest along river bank, Río Frío, about 8 km. below Tactic, alt. 1,400 meters, April 1, 1941, *Paul C. Standley* 90524 (type in Herb. Field Mus.). In virgin forest, 1,200 meters, Finca Los Alpes, March, 1939, *C. L. Wilson* 346.

A relative of the South American *R. macrophylla* (Mart.) Planch. & Triana, but apparently fully distinct from it.

Tovomitopsis guatemaltecana (Donn. Smith) Standl. & Steyerl., comb. nov. *Chrysochlamys guatemaltecana* Donn. Smith, Bot. Gaz. 13: 26. 1888.

CACTACEAE

Bonifazia Standl. & Steyerl., gen. nov.—*Plantae epiphytiae ramosae inermes, caulis lignosis teretibus, ramis complanatis tenuibus oblique breviter crenatis acuminatis vel obtusis; flores parvi roseo-purpurei ad apices crenarum nascentes; ovarium ovale bracteis minutis late ovatis obtusis conspersum; perianthii tubus valde elongatus angustus limbo ca. quadruplo longior, extus squamis paucis latis remotis onustus, prope basin subito recurvus; perianthii segmenta pauca late oblonga obtusa apiculata; stamina numerosa (ca. 35) in fauce tubi inserta, filamentis gracillimis exsertis, antheris ovali-ovoideis basi emarginatis parvis; stylus gracillimus staminibus longior, stigmatibus 4 brevibus; fructus ignotus.*

Bonifazia quezalteca Standl. & Steyerl., sp. nov.—*Caules graciles, vetustioribus 5–6 mm. diam.; rami oblongo-lineares vel interdum ovato-lanceolati 15–47 cm. longi et ultra 4–5 cm. lati, apice acuti vel acuminati, rarius obtusi, basi attenuati et subteretes, in sicco tenues, crenati, crenis 2–3 cm. longis plus minusve obliquis; areolae parvae brevissime pilosae; ovarium 6–7 mm. longum, squamis vix ad 1 mm. longis; perianthii tubus 4.5 cm. longus prope medium 4 mm. latus, ad faucem 8 mm. latus, segmentis ovalibus vel late oblongis obtusissimis ca. 1.5 cm. longis; stamina purpurea 1 cm. longe exserta et ultra, antheris ca. 1 mm. longis; stylus purpureus staminibus bene longior, stigmatibus linearibus 2 mm. longis.*—Guatemala: Dept. Quezaltenango: Above Mujuliá, between San Martín Chile Verde and Colombia, alt. about 1,800 meters, pendent from tree trunks in dense damp mixed forest on white sand slopes, February 1, 1941, *Paul C. Standley* 85603 (type in Herb. Field Mus.).

This is one of the most beautiful and ornamental of the epiphytic cacti of Central America. While of course the flowers are not so large as in some species of *Epiphyllum* or of the *Cereus* group, they are borne in great abundance and are of exceptionally beautiful color and form. They are of a delicate, rather pale reddish purple. The plants hang loosely against the tree trunk, the flowers being abruptly recurved from the base so that their apices point upward.

It was believed at first that this Guatemalan plant could be referred to the genus *Wittia*, which it resembles in having the tube of the perianth much longer than the limb. However, the plant constitutes a very distinct unit, that can not be placed satisfactorily in any of the groups segregated by Britton and Rose, and has much better claims to generic rank than most of those. Its relationship is clearly with the monotypic genus *Chiapasia*, which also occurs in Guatemala. It has in common with that a distinctive growth habit, and particularly the narrow perianth, abruptly recurved from the base. The latter character of *Chiapasia*, strangely enough, seems to have escaped the attention of the authors of that genus, although it is very conspicuous in their illustration of it. Perhaps they believed that the position of the flowers was the result of handling during drying. The Guatemalan plant can not be referred satisfactorily to *Chiapasia*, because in that the segments of the perianth are two to three times as long as the tube, very narrow and long-attenuate, and the stamens are about half as numerous.

The new genus, whose single species is one of the handsomest of Guatemalan plants, is dedicated to the family of Don Guillermo Bonifaz of Quezaltenango. The senior author has spent two months in their *pensión* in that city, and has many cherished memories of the gracious hospitality extended to him. To no other lodging place in Central America would he return with so much pleasure as to the Pensión Bonifaz, of which he has only happy memories, despite the numbing cold and fog that so often characterize the climate of that western metropolis of Guatemala.

***Heliocereus heterodoxus* Standl. & Steyermark, sp. nov.**—*Epi-*
phytica plus minusve scandens, caulis complanatis vel trigonis
3–4 cm. latis remote crenatis, areolis 2–4 cm. distantibus parvis dense
tomentosis; spinae 4–8 usque ad 8 mm. longis vulgo brevioribus
acicularibus fuscis vel primo pallidis; flores 8–11 cm. tantum longi,
tubo limbo longiore usque ad 7 cm. longo, bracteis tubi oblongis
obtusissimis viridibus denticulatis, spinis gracillimis fere filiformibus
laxis pallidis usque ad 1 cm. longis; segmenta interiora limbi 3.5–4.5
cm. longa obovata vel late oblonga apice late rotundata, segmentis
exterioribus paullo brevioribus; stamina segmentis paullo breviora,
filamentis roseis, antheris albis 3 mm. longis.—Guatemala: Dept.
San Marcos: Along Río Vega between San Rafael and the north-
eastern portion of Volcán de Tacaná, alt. 2,500–3,000 meters,
February 21, 1940, Julian A. Steyermark 36291 (type in Herb. Field
Mus.); also no. 36262 from the same locality. Dept. Chimaltenango:

Pendent from tree in wet forest, Las Calderas, lower slopes of Volcán de Fuego, 1,800–2,100 meters, *Standley* 57830; *John R. Johnston* 1208.

From all other species of the genus this is distinguished by the relatively long corolla tube, that of other species being much shorter than the limb. The type and one other collection are noteworthy for having complanate rather than 3-angulate stems, but other specimens placed here have the normal 3-angulate stems.

THYMELAEACEAE

Daphnopsis malacophylla Standl. & Steyermark, sp. nov.—*Fru-*
tex vel arbor 4.5–6-metralis, ramis ferrugineis, novellis dense pilis
patentibus fulvis hirtellis vel breviter hirsutis; folia breviter petiolata
chartacea, petiolo 4–8 mm. longo; lamina oblongo-elliptica vel
oblongo-ovovata 7–16 cm. longa 2.5–6.5 cm. lata, acuta vel acumi-
nata, apice ipso obtuso, basi acuta, supra sparse pilis teneris patentibus
vel adpressis pilosa, serius glabrata, nervis venisque prominulis,
subtus fere concolor ubique dense pilis mollibus patentibus vel sub-
adpressis pilosa vel hirtella, costa gracili prominente, nervis laterali-
bus utroque latere ca. 7 irregularibus angulo lato vel latiusculo
divergentibus, venis prominulis laxe reticulatis; pedunculi terminales
et extra-axillares 1.5–4.5 cm. longi dense hirtelli, umbellis densis
multifloris, pedicellis brevibus vix ad 3 mm. longis dense adpresso-
pilosus; perianthium masculum 6 mm. longum adpresso-hirtellum,
lobis vix ultra 1 mm. longis; perianthium femineum 5 mm. longum
strigosum, lobis rotundo-ovatis patentibus; stylus breviter exsertus;
fructus ovoideus ca. 7 mm. longus sparse adpresso-pilosus acutus,
stylo brevi terminatus.—Guatemala: Dept. Huehuetenango: Cerro
 Cananá, Sierra de los Cuchumatanes, alt. 2,500–2,800 meters, July
 18, 1942, in wet cool cloud forest, between Cananá and Quetzal,
Julian A. Steyermark 49104 (type in Herb. Field Mus.). Cerro
 Huitz, between Mimanhuitz and Yulhuitz, 1,500–2,600 meters,
Steyermark 48559, 49646. Wet cloud forest, Cruz de Limón, between
 San Mateo Ixtatán and Nucá, 2,600–3,000 meters, *Steyermark*
 49820, 49844.

Distinguished among Central American species by the abundant soft pubescence and acute leaves.

SAPOTACEAE

Sideroxylon Stevensonii (Standl.) Standl. & Steyermark, comb.
 nov. *Dipholis Stevensonii* Standl. *Trop. Woods* 11: 21. 1927. *S. rufotomentosum* Standl. *Carnegie Inst. Wash. Publ.* 461: 79. 1935.

VACCINIACEAE

By A. C. Smith

Macleania linearifolia (Donn. Smith) A. C. Smith, Contr. U. S. Nat. Herb. 28: 368. 1932.—Guatemala: Dept. Alta Verapaz: Large swamp just east of Tactic, alt. 1,300 meters, *Steyermark 43953*; woody epiphyte, sprawling on top of knob in swamp; leaves coriaceous, dark green above, paler beneath; calyx and corolla angled, both orange-red.

In view of the fact that this species has previously been recorded only from the type, also from Alta Verapaz, the above record is noteworthy. The Steyermark specimen has the leaf blades still linear-oblong, but the proportions are somewhat less accentuated than those of the type, which has the blades at least five times as long as broad. The present collection has some of the blades only slightly more than three times as long as broad, but nevertheless the species may readily be distinguished from its closest ally, *M. insignis* Mart. & Gal., which is comparatively common in Guatemala.

Empedoclesia brachysiphon Sleumer, Notizbl. Bot. Gart. Berlin 12: 124. 1934.—Guatemala: Dept. Huehuetenango: Vicinity of Maxbal, about 17 miles north of Barillas, Sierra de los Cuchumatanes, alt. 1,500 meters, *Steyermark 48838*; epiphyte; leaves coriaceous, deep green above, paler beneath; rachis and calyx deep red; corolla orange-red without, pale cream-colored on lobes within.

The second collection of this remarkable monotypic genus agrees, in all essential characters, with the type specimen, *Tuerckheim 4196*, from Cobán, Alta Verapaz. The essential characters of the genus are the bracteoles at the apex of the pedicel, the alternately unequal filaments, and the very short anther tubules with apical pores. In his recent key to the genera of Vacciniaceae, Sleumer (Bot. Jahrb. 71: 368–389. 1941) places *Empedoclesia* closest to *Orthaea*, but I am inclined to agree with his first impression and consider the genus as a relative of *Macleania*. However, *Empedoclesia* must be construed as one of the most distinct genera of the family.

The Steyermark collection differs from the original description in several minor characters: The lateral nerves of the leaf blades are only about 4 rather than 6 or 7; the raceme reaches a length of 31 cm., rather than merely 10–12 cm., and bears up to 40 flowers, those toward the base being soon caducous; the pedicels are up to 10 mm. long and have subtending bracts up to 5 mm. long; the calyx is 12 mm.

long at maturity rather than 9 mm.; the corolla is up to 25 mm. long and 6 mm. in diameter, the filaments and anthers being each about 5 mm. long. These larger dimensions merely indicate that the recent collection has more robust inflorescences than the type.

Disterigma Humboldtii (Kl.) Niedenzu, Bot. Jahrb. 11: 224. 1889; A. C. Smith, Brittonia 1: 222. 1933.—Guatemala: Dept. Huehuetenango: Cerro Huitz, between Barillas and Mimanhuitz, Sierra de los Cuchumatanes, alt. 1,600-2,600 meters, *Steyermark* 48535; shrubby epiphyte; corolla whitish.

As compared with material of this species from Costa Rica, Panama, and Colombia, the Guatemalan collection has slightly larger leaf blades, these being up to 15 mm. long and 7.5 mm. broad. In all floral details, however, the cited specimen is precisely matched by specimens from farther south. The flowers are slightly larger than those described by me in 1933, but since then I have seen other specimens with the corolla up to 8.5 mm. long and the filaments up to 5 mm. long, dimensions found in the Steyermark collection. It is conceivable that when more material from Central America is available, it may prove desirable to recognize the Guatemalan plant nomenclaturally on the basis of its larger leaves.

The collection of *Disterigma* in Guatemala is especially noteworthy, as the genus has otherwise not been reported north of Costa Rica.

Malea pilosa Lundell, Amer. Midl. Nat. 29: 484. 1943.—Guatemala: Dept. Huehuetenango: La Sierra (Tujimach), across river from San Juan Atitlán, Sierra de los Cuchumatanes, alt. 2,500-2,900 meters, *Steyermark* 52017; epiphytic liana or shrubby; leaves subcoriaceous, deep green above, dull green beneath; upper forested slopes.

Malea Lundell, a recently described monotypic genus apparently related to *Gaylussacia*, was based on two collections made in Chiapas by Matuda; the occurrence of the genus in Guatemala is of especial interest. Although the Steyermark collection lacks corollas and stamens, it precisely matches Matuda's type in all vegetative details, as well as in characters of the calyx and ovary.

LOGANIACEAE

Buddleia stenoptera Standl. & Steyermark, sp. nov.—Frutex 1-3-metralis dense ramosus, ramis tetragonis, angulis anguste vel

interdum latiuscule alatis, novellis primo dense tomento fulvo vel brunnescente stellato-lanatis; folia chartacea vel fere membranacea breviter petiolata vel saepe sessilia, petiolo rare usque 1 cm. longo; lamina late ovata vel elliptico-ovata usque lanceolata 5–15 cm. longa 1.5–7 cm. lata, acuta vel attenuato-acuminata, basin versus sensim angustata vel interdum subito contracta et cuneato-attenuata, arcte dentata vel serrata, supra stellato-tomentosa vel glabrata, subtus dense tomento laxo albido vel brunnescente stellato ubique obtecta; flores lutescentes vel albidi 3 mm. longi dense capitati, capitulis globosis 8 mm. diam. interrupto-spicatis, spicis in paniculas terminales usque 13 cm. longas et aequilateras dispositis, floribus dense tomentosis; calyx brevis, dentibus brevibus latis subobtusis; corolla extus tomentulosa, lobis patentibus oblongo-ovatis obtusis, intus plus minusve villosulis; capsula 2.5–3 mm. longa ovalis teres tomentulosa apice rotundata.—Guatemala: Dept. Quezaltenango: Hot springs in canyon tributary to Río Samalá, below Zunil, alt. 2,500 meters, January 24, 1940, Julian A. Steyermark 35001 (type in Herb. Field Mus.).

Besides the type, we have referred to this species eleven other collections from the departments of Jalapa, Huehuetenango, Guatemala, Quezaltenango, Chimaltenango, and Quiché. Here is to be referred all or most of the Guatemalan material determined heretofore as *B. floccosa* Kunth. That was based upon material of Mexican origin which, from description, must have been quite distinct from the Guatemalan plant.

Buddleia amplexicaulis Standl. & Steyermark, sp. nov.—Frutex 1.5–2.5 m. altus, ramis pallidis tetragonis laxe pilis fulvidis ramosis tomentosis, angulis anguste alatis; folia modica sessilia, ovata vel oblongo-ovata 6–15 cm. longa 2.5–5 cm. lata, acuta vel obtusa, prope basin abrupte contracta et in partem petioliformem 1–3.5 cm. longam 4–16 mm. latam basi amplexicaulem et cordatam contracta, crenato-dentata, supra dense stellato-tomentosa vel glabrata, subtus densissime tomento stellato brunneo vel fulvo laxo non adpresso tomentosa; flores dense stellato-tomentosi dense capitati, 3 mm. longi, capitulis 6–8 mm. diam. dense multifloris globosis interrupto-spicatis; calyx brevis breviter dentatus dense tomentosus; corolla extus tomentella, lobis obtusis intus glabris.—Guatemala: Dept. Quezaltenango: El Chorro, near Zunil, February 17, 1939, Paul C. Standley 65479 (type in Herb. Field Mus.). Dept. San Marcos: Near Río Vega, Volcán de Tacaná, alt. 2,500–3,000 meters, February,

1940, Steyermark 36332. Above Río Tacaná, near San Antonio, alt. 2,700 meters, February, 1939, Standley 66124.

The relationship is with *B. floccosa* Kunth, but in that the leaves are definitely petiolate, or else sessile and acute or acuminate at the base.

Buddleia astralis Standl. & Steyermark, sp. nov.—Arbor 12-metralis, ramis crassis tetragonis dense inaequaliter tomentosis, pro parte dense minute tomento arcte adpresso albido conspersis, quoque tomento longiore fulvido stellato remote obtectis; folia magna longipetiolata chartacea, petiolo nudo crasso 5-7 cm. longo ut ramis induto; lamina ovata 19-27 cm. longa 9-11 cm. lata longiacuminata, basi acuta, supra viridis, primo tomentulosa cito glabrata, subitus ubique dense tomento pallido arcte adpresso obtecta, quoque tomento laxiore stellato detergibili conspersa, nervis lateralibus late divergentibus prominentibus, venis prominentibus laxe reticulatis; flores flavi 4 mm. longi in capitula pauciflora 7 mm. diam. aggregati, capitulis cymoso-paniculatis, paniculis terminalibus pyramidalibus usque 25 cm. longis sessilibus, ramis dense inaequaliter tomentulosis; calyx tomentulosus 2 mm. longus, dentibus latis obtusis; corolla calyce duplo longior extus tomentulosa, lobis rotundo-ovatis apice rotundatis patentibus intus sparse villosis.—Guatemala: Dept. San Marcos: Brushy field, lower slopes of Loma de la Paloma, above Finca El Porvenir, southern slopes of Volcán de Tajumulco, alt. 1,400-1,700 meters, March 8, 1940, Julian A. Steyermark 37276 (type in Herb. Field Mus.).

The present plant is obviously related to *B. ovandensis* Lundell, collected on Mount Ovando, Chiapas, and further collections will be necessary to determine whether two distinct species are represented. In *B. ovandensis* the tomentum is uniform, minute, and closely appressed, and in age the lower surfaces of the leaves are green. In *B. astralis* the tomentum is conspicuously uneven, the lower coat consisting of minute appressed silvery hairs, over which are scattered loose copse-like tufts of a lax, much-branched, brownish tomentum; the lower surfaces of the leaves are whitish or silvery in age.

Spigelia carnosia Standl. & Steyermark, sp. nov.—Perennis, erecta vel decumbens, herbacea vel inferne frutescens omnino glabra, caule tereti; stipulae triangulares acutae 3 mm. longae persistentes; folia opposita, suprema quaternata, petiolo usque 6 mm. longo, in vivo crasse carnosa, in sicco chartacea vel fere coriacea; lamina elliptica

usque elliptico-oblonga, late obovata vel ovata, 5–8.5 cm. longa 2–3.5 cm. lata, breviter acuminata usque obtusa, basi acuta, supra intense viridis, nervis obsoletis, subtus multo pallidior fere enervis; spicae 4–13 cm. longae multiflorae longipedunculatae graciles secundae, floribus sessilibus; calycis segmenta 5 mm. longa linearilanceolata subrecurva; corolla 1.5 cm. longa superne sensim dilatata, extus interdum lilacina, intus alba; stylus delapsa corolla sepalis aequilongus vel brevior apicem capsulae subaequans; capsula 5 mm. lata laevis glabra, breviter biloba; semina lutescentia fere laevia 2.5 mm. longa.—Guatemala: Dept. Huehuetenango: Dense rich wet woods between Yulhuitz and Maxbal, Sierra de los Cuchumatanes, alt. 1,400–1,500 meters, July 15, 1942, Julian A. Steyermark 48692 (type in Herb. Field Mus.). Dept. Alta Verapaz: Río Tzimajil near Cobán, alt. about 1,300 meters, bought from peddler, Standley 90272.

When dried, this plant appears little different from *S. Humboldtiana* Cham. & Schlecht., but when fresh the plants are very different, the leaves of this species being as fleshy as those of a begonia, while those of *S. Humboldtiana* are thin and not succulent. In the latter the style is conspicuously longer than in this new species.

OLEACEAE

Fraxinus bicolor Standl. & Steyer., sp. nov.—Frutex 3-metralis, ramulis gracilibus fusco-brunneis teretibus sparse lenticellatis, novellis dense puberulis; folia vulgo 5-foliolata plerumque 8–12 cm. longa; foliola membranacea, lateralia sessilia, terminale longe petiolatum, late ovalia usque ovata, oblongo-ovata vel elliptica 3–8 cm. longa 1.5–3.5 cm. lata, subacuta vel acuminata, basi rotundata vel subacuta, adpresso crenata, dentibus obtusis, supra viridia sparse dense pilosula, subtus glaucescentia dense velutino-pubescentia, nervis venisque supra subtusque vix prominentibus.—Guatemala: Dept. Guatemala: Near Fiscal, dry rocky brushy hillsides, alt. 1,100 meters, December, 1940, Paul C. Standley 80408 (type in Herb. Field Mus.). Dept. Jutiapa: Between Jutiapa and La Calera, south of Jutiapa, 850 meters, Standley 76150. Dept. Chiquimula: Wooded summit of Mount Tojás, near Sasmo, northwest of Chiquimula, 520 meters, October, 1939, Steyermark 30215.

This may be only a form of *F. vellerea*, described below, but it differs in the form of its leaflets, which are thinner and appressed-crenate, rather than acutely serrate. Both these species, unfortunately, are known only from sterile material, but they are clearly different from all the Mexican species.

Fraxinus Cavekiana Standl. & Steyerm., sp. nov.—Arbor usque 23 m. alta, ramulis crassis primo puberulis, cito glabratibus, fusco-brunneis, lenticellis magnis elevatis sparse conspersis; folia magna 5–9-foliolata, vulgo 20–35 cm. longa; foliola omnia petiolulata, petiolulis interdum elongatis, ovata usque oblongo-lanceolata vulgo 8–14 cm. longa et 3–7 cm. lata acuminata vel longe angusteque acuminata, basi plerumque acuta vel abrupte acutata, membranacea, supra viridia sublucida, costa nervisque impressis, subtus aliquanto pallidiora glabra vel sparse pubescentia, secus costam saepe breviter barbata, nervis valde prominentibus, venis prominulis laxe reticulatis; panicula fructifera magna ca. 22 cm. longa laxa, pedicellis filiformibus brevibus; fructus 4.5–5 cm. longus, parte seminifera ca. 1.5 cm. longa subtereti, ala obtusa 6–7 mm. lata vix ad medium partis seminiferae decurrente.—Guatemala: Dept. Quiché: Stream banks, Nebaj, alt. 1,860 meters, November, 1934, A. F. Skutch 1660 (type in Herb. Field Mus.).

Here are referred tentatively eight sterile collections from Quezaltenango and Huehuetenango, some of which may not actually belong with *F. Cavekiana*. The type was distributed as *F. Uhdei* (Wenz.) Lingelsh., a Mexican species which occurs also in Guatemala, but is distinguished by having fruits scarcely more than half as large. The species name is derived from Cavek, the name of the royal house of Quiché, from the time of its establishment until its destruction by the Spaniards.

Fraxinus vellerea Standl. & Steyerm., sp. nov.—Arbor 4–5-metralis, ramulis puberulis vel glabratibus, vetustioribus fusco-brunneis teretibus lenticellis parvis pallidis sat dense conspersis; folia 11–17 cm. longa vulgo 7-foliolata, interdum 5-foliolata; foliola crasse membranacea firma, lateralia sessilia, terminale petiolulatum, late ovata usque oblongo-ovata vel lanceolato-oblonga 4–8 cm. longa 2–4 cm. lata, acuta vel longiacuminata, lateralia basi obtusa vel oblique rotundata, terminale acutum, supra viridia sparse pilosula sublucida in sicco fuscescentia, nervis venisque non elevatis, subtus pallidiora densissime velutino-pilosula, in toto margine dense serrata, dentibus acutis non adpressis.—Guatemala: Dept. Jutiapa: Damp thicket near Jutiapa, alt. 850 meters, October–November, 1940, Paul C. Standley 76162 (type in Herb. Field Mus.).

There are at hand four other collections from the departments of Jalapa, Chiquimula, and Guatemala, all sterile. The relationship is with *F. Purpusii* Brandeg. of Mexico and Guatemala, but in that the

similar leaflets are glabrous or essentially so, while in *F. vellerea* they are densely pubescent even when ready to fall.

GENTIANACEAE

Centaurium rosans Standl. & Steyer., sp. nov.—*Annua* erecta prope basin dense laxeque ramosa, caulis gracilis saepe diffuse ramosis; folia patentia late linearia vel oblanceolata 1-2 cm. longa acuta sessilia, vulgo basin versus attenuata; flores rosei ad anthesin 11-13 mm. longi longipedicellati, pedicellis 1-2 cm. longis adscendentibus, non stricte erectis; calyx 6 mm. longus, segmentis linear-lanceolatis longiattenuatis; corollae tubus calycem aequans, lobis late ovatis obtusis tubo paullo longioribus; semina numerosissima minuta brunnea.—Guatemala: Dept. Quezaltenango: Moist banks, Volcán de Zunil, alt. 2,500 3,000 meters, January, 1940, Julian A. Steyermark 34609 (type in Herb. Field Mus.). Oak forest, Cerro La Pedrera, south of Quezaltenango, February, 1939, Standley 66453. Between Fuentes Georginas and Zunil, Standley 67317.

Six other collections have been seen, which show that the species occurs also in the departments of Sacatepéquez, Chimaltenango, Sololá, and Huehuetenango. Apparently referable to it, also, is Liebmann 10782 from Chinantla, Oaxaca. The plant is related to *C. strictum* (Schlecht.) Druce, common in Guatemala, but that is a strict plant, with the flowers confined to the upper part of the stem, the pedicels erect or nearly so, and with much shorter and broader calyx segments.

Gentiana guatemalensis Standl. & Steyer., sp. nov.—*Perennis*, caudice crasso lignoso, caulis procumbentibus numerosis crassiusculis 5-15 cm. longis dense foliatis; folia patentia sessilia oblonga 1.5-2.5 cm. longa 4-6 mm. lata, apice obtusa vel anguste rotundata, basi paullo angustata, enervia, ad margines minute scaberula; flores 1-3 terminales vel subterminales sessiles 3.5 cm. longi purpureo-caerulei; calycis tubus obconicus 8 mm. longus, lobis 5 inaequalibus anguste lanceolato-oblongis ca. 10 mm. longis sub-acutis ad margines scaberulis; corolla campanulata 2.5 cm. longa, lobis rotundo-ovatis fere 1 cm. longis apice rotundatis, plicis lobis multo brevioribus bilobis, lobis triangularibus acutis vel acuminatis sparse serratis.—Guatemala: Dept. Huehuetenango: Alpine meadow, region of Chémal, Sierra de los Cuchumatanes, alt. 3,300 meters, December, 1940, Paul C. Standley 81113 (type in Herb. Field Mus.), 81080; John R. Johnston 1723.

This differs from *G. Lewisiae* in its larger flowers, which are purple-blue rather than clear blue; also in having different plicae or folds between the corolla lobes.

Gentiana Lewisiae Standl. & Steyerm., sp. nov.—*Perennis prostrata, caulis gracilis 6–13 cm. longis simplicibus unifloris; folia patentia oblonga 8–13 mm. longa 4–5 mm. lata apice obtusissima vel rotundata, basi subacuta sessilia 1-costata enervia subtus paullo pallidiora; flos terminalis sessilis basi foliis 2 fulcratus; calycis tubus 5–6 mm. longus anguste obconicus, lobis 5 oblongis vel anguste spathulato-oblongis 4–7 mm. longis subacutis erectis; corolla caerulea 2 cm. longa campanulata, lobis 5 ca. 3 mm. longis rotundo-ovatis apice obtusissimis, plicis lobis multo brevioribus breviter bilobis, lobis rotundatis.*—Guatemala: Dept. Totonicapán: Damp meadow, Pacajá, region of Desconsuelo, in the mountains above Totonicapán, alt. 3,100–3,200 meters, *Paul C. Standley* 84556 (type in Herb. Field Mus.). Region of Salvachán, mountains above Totonicapán, 3,100 meters, *Standley* 84487. Cerro Quiché, 3,300 meters, February, 1940, *F. W. Hunnewell* 17210.

The species is named for Mrs. B. E. Lewis of Guatemala, whose keen interest in the plants of Guatemala has resulted in the addition of numerous species, previously unknown, to its recorded flora. She has taken a particular interest in the fascinating, varied, and often very beautiful flowers of the alpine regions, which often remind one keenly of the alpine plants of the western mountains of the United States.

In 1940 and 1941 the senior author collected large-flowered gentians in the Desconsuelo region of Totonicapán and in the Chémal area of the Sierra de los Cuchumatanes. It was assumed that a single species was represented, but when the material was compared, it was revealed that the plants of these two areas were quite distinct. *Gentiana Lewisiae* and *G. guatemalensis* are more or less related to several Mexican species, but not closely to any of them. There are now known from Guatemala four gentians, although apparently none of them had been found there until 1940, in spite of the fact that one of them grows beside one of the most frequented roads of the country, along which stage coaches were traveling at least 200 years ago.

Gentiana pumilio Standl. & Steyerm., sp. nov.—*Annua humilis vix ultra 2.5 cm. alta simplex vel e basi ramosa, caulis unifloris densissime foliatis; folia radicalia ca. 4 oblongo-ovata usque 15 mm. longa et 6 mm. lata obtusa vel subacuta, caulinis magnitudine*

et forma variabilibus, inferioribus late obovatis, superioribus late ovatis, plus minusve amplexicaulibus, omnibus dense imbricatis albo-marginatis 2–7 mm. longis, carinatis, late obtusis et saepe mucronatis; flores inter folia sessiles 6–7 mm. longi; calyx fere tubulosus, dentibus 5 oblongis brevibus erectis obtusissimis late albomarginatis, sinubus latis separatis minutissime marginibus scaberulis fere aequalibus; corolla pallide caerulea infundibuliformis, limbo rotato, lobis rotundo-ovatis vel obovatis 3.5 mm. longis apice rotundatis, plicis lobis brevioribus emarginatis vel breviter bilobis; capsula anguste oblonga 6 mm. longa.—Guatemala: Dept. San Marcos: Scattered on dry rocky open slopes among *Alnus* trees, between San Sebastián and summit of Volcán de Tajumulco, altitude about 4,000 meters, February, 1940, Julian A. Steyermark 35489 (type in Herb. Field Mus.).

There are at hand five additional collections, from alpine meadows of Volcán de Tacaná, San Marcos, the region of Desconsuelo, Totonicapán, and the region of Chémal, Sierra de los Cuchumatanes, Huehuetenango. The plant has been collected also in Chiapas, on Volcán de Tacaná (*E. Matuda* 2868). It is a close ally of *Gentiana sedifolia* HBK., a common species of the South American Andes, which occurs also in Costa Rica and has been collected recently in the Chémal region of the Sierra de los Cuchumatanes, Huehuetenango, where it grew with *G. pumilio*. In recent accounts of the gentians of South America, students of the genus have thrown up their hands in despair at alignment of the forms of *G. sedifolia* (see Gilg, Repert. Sp. Nov. 2: 51. 1906, and elsewhere). The South American material of the species does show great variation in several respects, but we have seen among the numerous collections available for study none like the Guatemalan collections of *G. pumilio*, which are all quite uniform in their characters. *G. pumilio* is a much smaller plant, never more than 1–2.5 cm. high, noteworthy for its densely imbricate leaves, which quite conceal the stem, and for its small flowers, in which the plicae between the corolla lobes are short and somewhat bilobate. *G. sedifolia* was illustrated as having plicae quite as large as the corolla lobes.

Schultesia guianensis (Aubl.) Malme, forma *lutescens* Standl. & Steyermark, f. nov.—A forma typica non nisi corollis pallide luteis vel ochroleucis differt.—Guatemala: Dept. Jalapa: Damp meadow in oak forest, near Jalapa, alt. 1,360 meters, November, 1940, Paul C. Standley 76561 (type in Herb. Field Mus.).—Honduras: Dept. Comayagua: Dry open bank, near Siguatepeque, 1,400 meters, February, 1928, Standley 56088.

Because of its pale buff or cream-colored corollas, this is much different in appearance from the common form of the species, with dirty pink flowers. Large numbers of the plants, all much reduced in size and mostly 2-3 cm. high, were found at the Jalapa station.

Voyria truncata (Standl.) Standl. & Steyermark, comb. nov.
Leiphaimos truncata Standl. Contr. U. S. Nat. Herb. 20: 196. 1919.
V. Allenii Steyermark, Ann. Missouri Bot. Gard. 28: 460. 1941.

APOCYNACEAE

Tonduzia longipedunculata Woodson, sp. nov.—Frutex. Folia 4-nata longiuscule petiolata, lamina anguste elliptico-lanceolata longe acuminata basi in petiolum ca. 3 cm. longum gradatim attenuata 15-20 cm. longa 2.5-3 cm. lata membranacea utrinque glabra. Inflorescentia subterminalis axillaris longe (ca. 7-8 cm.) pedunculata superne 3-chasialiter ramosa subcorymbosa multiflora; pedicellis gracilibus ca. 0.5 cm. longis; bracteis minutis; calycis laciniis ovatis acuminatis ca. 0.2 cm. longis subconduplicatis viridibus glabris; corollae lacteae tubo ca. 0.8 cm. longo basi ca. 0.5 mm. diam. paullo sub medio aliquantulum dilatato ibique staminigero, ostio ca. 0.75 mm. diam. dilute luteo, lobis oblongo-ovatis ca. 0.9 cm. longis patulis. Folliculi ignoti. —Guatemala: Dept. Sololá: Trail between village of San Pedro, via San Juan, San Cristóbal Buena Vista, and northwestern slopes of Volcán de Santa Clara, alt. 1,900-2,300 meters, June 8, 1942, J. A. Steyermark 47313 (Herb. Missouri Bot. Gard., type; duplicate in Herb. Field Mus.).

Easily distinguished from other published species of *Tonduzia* by means of the elongate primary peduncles which far surpass the secondary branches.

ASCLEPIADACEAE

Matelea Medusae Woodson, sp. nov.—Frutex volubilis; ramulis gracilibus indumento complicato pilis aliis longioribus substrigosis eglandularibus aliis minute bulbosis glandularibus, internodiis longiusculis. Folia opposita longiuscule (ca. 1.5 cm.) petiolata oblongo-elliptica apice acuminata basi cordata 6-9 cm. longa 1.5-3.5 cm. lata membranacea omnino (more ramulo) complicato-pubescentia basi supra in sinu inconspicue glandulosa. Inflorescentia extra-axillaris umbelliformis 5-8-flora; pedunculo 0.5-1.0 cm. longo complicato-pubescente, bracteis vix bene visis; pedicellis pedunculum subaequantibus simile vestitis; calycis laciniis ovato-lanceolatis

longe caudato-acuminatis ca. 0.4 cm. longis basi ca. 0.15 cm. latis patulis extus complicato-pubescentibus; corollae rotatae dilute virides lobis linearibus longe acuminatis ca. 1.8 cm. longis basi ca. 0.15 cm. latis marginibus revolutis intus glabris extus complicato-pubescentibus; gynostegio longe stipitato, corona purpurea columnari ca. 0.13 cm. longa sub anthera lobis patulis 5 obtusis callosos-emarginatis antheris alternatis ligulisque minutis sub anthera instructa, stigmate dilute viridi plano ca. 0.13 cm. diam., polliniis subpendentibus ovoideis convexo-concavis apice margine hyalinis caudiculis corpusculoque minutis. Folliculi ignoti.—Guatemala: Dept. Huehuetenango: Rocky slopes above La Libertad, on Cerro Pueblo Viejo, alt. 1,900 meters, August 20, 1942, J. A. Steyermark 50987 (Herb. Missouri Bot. Gard., type; duplicate in Herb. Field Mus.).

Apparently of the subgenus *Ibatia*, but differing from all known species in the very narrow and elongate corolla lobes. The ligules of the corona immediately beneath the anthers are rather unusual in this subgenus, being found more frequently in subgen. *Chthamalia* (cf. Woodson, Ann. Missouri Bot. Gard. 28: 217-237. 1941). Species of *Chthamalia*, however, usually have narrower, more nearly horizontal pollinia.

Marsdenia stephanotidifolia Woodson, sp. nov.—Frutex volubilis magnus inflorescentia excepta glaber; ramis sat crassis cortice luteobrunneis conspicue lenticellatis, internodiis elongatis. Folia late ovata apice abrupte acuminata basi late rotundata inferne cordata 10-17 (-25?) cm. longa 6-11 (-17?) cm. lata subcoriacea basi supra in sinu conspicue glandulosa, petiolo 2.5-4.5 (-6?) cm. longo. Inflorescentia extra-axillaris umbelli- vel corymbiformis dichotome saepe repetitive divisa pedunculo petiolum fere aequante puberulo-papillato; pedicellis ca. 0.8 cm. longis puberulo-papillatis; calycis laciniis ovatis obtusis ca. 0.5 cm. longis extus papillatis; corolla urceolata ut videtur gilva ca. 1.1 cm. longa basi ca. 0.5 cm. diam. extus glabra intus marginibus lobi exceptis dense villosula, lobis erectis vel paululo patulis tubum aequantibus; gynostegio proprio inclusu rostro stigmatis exerto, antheris ca. 0.5 cm. longis subsessilibus dorso basi triangulo-incrassatis, appendicibus apicalibus simplicibus membranaceis ca. 0.15 cm. longis, polliniis oblongoideis ca. 0.5 mm. longis corpusculum aequantibus, rostro stigmatis conico apice obscure 2-fido ca. 0.4 cm. longo basi ca. 0.15 cm. crasso. Folliculi ignoti.—Guatemala: Dept. Quezaltenango: Wet mixed forest along Río Samalá, near Santa María de Jesús, alt. 1,500-1,650

meters, January 25, 1941, *P. C. Standley* 84593 (Herb. Missouri Bot. Gard., type; duplicate in Herb. Field Mus.). Densely forested, damp, white sand quebrada, El Pocito, south of San Martín Chile Verde, on road to Colombia, alt. about 2,200 meters, January 27, 1941, *Standley* 84905 (Herb. Missouri Bot. Gard.). Petén: Uaxactún, April 9, 1931, *H. H. Bartlett* 12555 (Herb. Missouri Bot. Gard.).

Bartlett's specimen, previously unidentified, is referred here with some uncertainty, since it consists merely of a few leaves and a short section of stem, all considerably larger than those of the type, possibly from lower on the liana. I suppose that *M. stephanotidifolia* is most closely related to the Antillean species of Rothe's section *Stephanotis* subsect. *Cubenses*, although the corolla lobes of those are proportionally longer. I can find no clearer indications of affinity.

Gonolobus versicolor Woodson, sp. nov.—Frutex volubilis validus, ramulis pilosis. Folia oblongo-ovata apice acute acuminata basi truncata vel levissime auriculata 4.5–8 cm. longa 2–3.5 cm. lata membranacea supra subtusque nervo medio piloso caeterumque glabra, petiolo 1.5–3.5 cm. longo piloso. Inflorescentia extra-axillaris pauciflora, pedunculo glabro 3–5 cm. longo, pedicellis 2–2.5 cm. longis glabris. Flores magni versicolores; calycis laciiniis linearilanceolatis longe acuminatis ca. 2 cm. longis basi ca. 0.3 cm. latis patulis glabris extus basi fulvo-brunneis apice nigro-brunneis; corollae rotatae lobis linearilanceolatis longe acuminatis 2.5–3 cm. longis basi ca. 0.5 cm. latis fere erectis crasse carnosis extus glabris brunneoflavis vel -viridibus intus medio luteo brunneis margine exteriore dilute viridi margine interiore fulvo-brunneo denseque papillato caeterumque glabris, ostio annulo latissime 5-lobo munito; corona propria late patelliformi ca. 0.5 cm. diam. latissime 5-loba margine caeterumque integra vel obscure crenulata dilute viridi; antheris ca. 0.3 cm. stipitatis sub stigma positis appendicibus dorsalibus late lingulatis ca. 0.1 cm. longis integris brunneis, polliniis pyriformibus cum caudiculis hyalinis ca. 0.15 cm. longis corpusculo minuto; stigmate anguste 5-gono plano-depresso angulis adscendentibus ca. 0.4 cm. latis. Folliculi ignoti.—Guatemala: Dept. Huehuetenango: Vicinity of Maxbal, about 17 miles north of Barillas, Sierra de los Cuchumatanes, alt. 1,500 meters, July 15–16, 1942, *J. A. Steyermark* 48768 (Herb. Missouri Bot. Gard., type; duplicate in Herb. Field Mus.).

A species of the subgenus *Eugonolobus* (cf. Woodson, Ann. Missouri Bot. Gard. 28: 242. 1941), of the general relationship of *G. uni-*

florus HBK. and *G. chloranthus* Schlecht. but with much narrower, virtually glabrous corolla lobes. The elaborate description of the flower colors is adapted from Dr. Steyermark's painstaking notes.

CONVOLVULACEAE

Ipomoea santae-rosae Standl. & Steyermark, sp. nov.—Frutex gracilis volubilis fere omnino glaber; folia longipetiolata late ovato-cordata 6–10 cm. longa 3.5–6.5 cm. lata longiacuminata, basi profunde cordata glabra vel subtus ad basin laminae parce hirtella; pedunculi fere obsoleti 1-flori, pedicellis crassiusculis 2–4 cm. longis; sepala insigniter inaequalia subcoriacea, longiora 18–25 mm. longa late oblonga vel ovalia apice obtusa et conspicue mucronata, tenuiter venosa; corolla tubuloso-infundibuliformis 6.5 cm. longa extus glabra rubro-purpurea, tubo fauce 1.5 cm. lato; capsula 4-locularis subglobosa glabra 8 mm. longa; semina 4 fusca minutissime puberula.—Guatemala: Dept. Santa Rosa: In thicket, vicinity of Chiquimulilla, alt. 325 meters, November–December, 1940, *Paul C. Standley* 79287 (type in Herb. Field Mus.), 79211; La Joya de Limón, east of Cuilapa, 900 meters, *Standley* 78329. Dept. Quetzaltenango: Concepción, *J. R. Johnston* 562.

Perhaps related, although not very closely, to *I. tiliacea* (Willd.) Choisy, which has sepals scarcely half as large.

Ipomoea saxorum Standl. & Steyermark, sp. nov.—Subgenus *Batatas*. Volubilis herbacea, caulibus crassiusculis dense pilis reflexis pilosis; folia membranacea longipetiolata rotundo-ovata 6–8 cm. longa 5–7 cm. lata, obtusa vel acuta, basi truncata vel subcordata, utrinque sat dense hirtella vel breviter pilosa, subtus paulo pallidiora, petiolis 2–3.5 cm. longis; pedunculi crassi 4–10 cm. longi dense pilosi pluriflori, pedicellis crassis 1.5–2.5 cm. longis pilosis; sepala inaequalia coriacea apice rotundata, exteriora ovalia 5 mm. longa prope apicem parce hirtella, interiora latiora glabra 8 mm. longa; corolla alba glabra 6.5 cm. longa, tubo ad orem 1 cm. lato; capsula subglobosa glabra ca. 1 cm. longa, apice late rotundata et abrupte in stylum contracta; semina glabra.—Guatemala: Dept. Chiquimula: Rocky outcrops along the gorge of Río Chiquimula, between Santa Bárbara and Petapilla, 4–6 miles north of Chiquimula, alt. 350–420 meters, October 22, 1939, *Julian A. Steyermark* 30254 (type in Herb. Field Mus.).

Not obviously related to any other Central American species, but belonging in the general relationship of *I. Morellii* Duchass. &

Walp., which differs in its purple flowers, almost glabrous leaves, and glabrous sepals.

Ipomoea heterodoxa Standl. & Steyermark, sp. nov.—Section *Batatas*. *Herbacea volubilis ubique glabra, caulibus gracilibus; folia longipetiolata herbacea, digitatim 5-7-foliolata, foliolis maxime inaequalibus, inferioribus integris breviter petiolulatis vel sessilibus oblanceolatis vel anguste oblanceolatis 4-8.5 cm. longis 8-18 mm. latis apicem obtusum versus paulo angustatis, basin versus sensim attenuatis; foliolum terminale 6-12 cm. longum profunde, saepe fere ad basin, 3-partitum, basi longe cuneato-attenuatum, lobis integris; pedunculi petiolis multo breviores vix ultra 14 mm. longi pauciflori, pedicellis gracilibus ca. 1 cm. longis; sepala inaequalia subcordiacea ovalia vel suborbicularia 5-6 mm. longa apice rotundata mutica; corolla alba roseo suffulta glabra 3.5-4 cm. longa, tubo supra calycem abrupte dilatato et 6-10 mm. lato, limbo ut videtur paulo ultra 1.5 cm. lato; capsula glabra ellipsoideo-ovata ca. 1 cm. longa; semina dense pilis longis mollibus patentibus pilosa.*—British Honduras: Maskall, December, 1933, *Percy Gentile* 871 (type in Herb. Field Mus.); Mullins River Road, open forest, *W. A. Schipp* 846; Honey Camp, Orange Walk, *C. L. Lundell* 149.—Mexico: Campeche: Tuxpeña, *C. L. Lundell* 974.

For some reason not now ascertainable, this plant has been determined as *I. dasysperma* Jacq., and reported from British Honduras under that name. It has no close resemblance to that Old World plant, and is well marked in the form of its leaves. The leaflets are 5 or 7, and instead of being uniform as is usual in such cases, the terminal leaflet is very deeply 3-lobate.

Ipomoea ophiodes Standl. & Steyermark, sp. nov.—Subgenus *Pharbitis*. *Volubilis herbacea, caulibus crassiusculis, vulgo prostratis vel procumbentibus et at nodos radicantibus dense pilis longis patentibus pallidis hirsutis, internodiis elongatis; folia modica longipetiolata late ovato-cordata 4-10 cm. longa 3-6.5 cm. lata acuta vel acuminata basi profunde cordata supra viridia tactu asperula hirsutula, subtus paulo pallidiora puberula, petiolis puberulis et sparsissime hirsutis; pedunculi brevissimi vix ad 1 cm. longi 1-flori, pedicellis 2.5-3.5 cm. longis gracilibus sparse minuteque puberulis et sparsissime hirsutis; sepala subaequalia subherbacea ca. 12 mm. longa lineari-lanceolata acuminata sparse hirsuta; corolla intense purpurea 8-9 cm. longa extus glabra, limbo subintegro 8 cm. lato.*—Guatemala: Dept. Santa Rosa: Brushy hillside, region of La More-

nita, northeast of Chiquimulilla, alt. 400 meters, December, 1940, *Paul C. Standley* 78884 (type in Herb. Field Mus.). Near Guazacapán, 220 meters, *Standley* 78700. Río Panal, lower slopes of Volcán de Tecuamburro, along the road between Cuilapa and Chiquimulilla, *Standley* 78579.

This plant is related, apparently, to *I. purpurea* (L.) Roth, but is noteworthy for its very large and handsome corollas, 1-flowered peduncles, and the dense covering of long spreading hairs on the stems. The pubescence of the leaves, in contrast, consists of very short and inconspicuous hairs.

Itzaea Standl. & Steyerm., gen. nov.—Frutices alte scandentes; folia petiolata crasse membranacea integra, subtus dense sericea; flores parvi virides in cymulas densas pauci- vel multifloras breviter pedunculatas axillares petiolo breviores dispositi; sepala subaequalia suborbicularia apice rotundata vel obtusissima et obscure apiculata, extus sericea intus glabra; corolla campanulata breviter 5-loba extus sericea, lobis induplicato-valvatis; stamina ad faucem affixa breviter exserta, filamentis elongatis basi paullo dilatatis; antherae oblongae, loculis contiguis, connectivo angusto; discus inconspicuus; ovarium 1-loculare 4-ovulatum; styli 2 breves, stigmatibus magnis globoso-capitatis; capsula globosa sublignosa, pericarpio crasso, 3-4-valvata, valvis apice dehiscentibus et in valvulas numerosas lineares secedentibus; semina 3-4 magna glabra pulpo rubro copioso circumdata.

Itzaea sericea (Standl.) Standl. & Steyerm., comb. nov. *Lysiostyles sericea* Standl. Field Mus. Bot. 8: 322. 1931.

Of this plant the following collections are at hand: Honduras: Dept. Atlántida: Lancetilla Valley, *A. M. Chickering* 130, type; Lancetilla Valley, *Standley* 55233, 56577. In forest, slopes of Mount Cangrejal, Dept. Atlántida, 180 meters, *T. G. Yuncker, J. M. Koepper & K. A. Wagner* 8452.—British Honduras: Swamp forest, Machaca, *W. A. Schipp* 1210.

We are somewhat reluctant to establish a new genus for this plant, but it can not be placed satisfactorily in any described group we have studied. Probably it is as closely related to *Lysiostyles* as to any genus of the Convolvulaceae, but it evidently is out of place there. The form of the capsule, which apparently has no fleshy pericarp, is distinctive in its dehiscence. When fully mature it splits into numerous hard but somewhat elastic vertical sections that remind one of the staves of a barrel. The generic name is derived from Itzá, the name of the race that established the old Maya Empire.

Jacquemontia guatemalensis Standl. & Steyerm., sp. nov.—
 Perennis(?) herbacea, caulis repentibus ca. 50 cm. longis modice denseve pilis stellatis retrorso-villosis; folia breviter longeve petiolata; lamina late ovata 3.5–4.5 cm. longa 2.5–3 cm. lata subito breviterque caudato-acuminata, basi cordata vel subcordata, utrinque sparse vel densiuscule stellato-pilosa; cymae axillares 2–3-florae, pedunculis gracilibus 1.7–3 cm. longis dense breviterque stellato-pilosulis, pedicellis 4–7 mm. longis; bracteae 1.5–2 mm. longae subulatae; sepala 5.5–6 mm. longa 2 mm. lata dorso modice denseve stellato-pilosa, late lanceolata, acuminata; corolla caerulea glabra 9 mm. longa, lobis abrupte cuspidatis; filamenta prope medium corollae inserta glabra, antheris late oblongis 0.5–0.6 mm. longis; ovarium glabrum; capsula depresso-globosa 3.8–5.5 mm. alta 4.5–6 mm. lata; semina 4 compresso-trigona fulvo-brunnea 3.5 mm. longa corrugata.—Guatemala: Dept. Chiquimula: Creeping among grasses on slopes of grassy plains about Chiquimula, alt. 400 meters, October, 1939, Julian A. Steyermark 30066 (type in Herb. Field Mus.).

Most closely related to *J. oaxacana* (Meissn.) Hallier and *J. azurea* (Desr.) Choisy. From the latter it differs in the eglandular pubescence of the sepals, shorter appressed pubescence of the stems, and less abundant pubescence on the leaves. From *J. oaxacana* it is distinguished by the smaller, blue rather than white corolla, the sepals dorsally stellate-pubescent throughout instead of glabrous or merely ciliate, the gradually long-acuminate rather than abruptly acuminate sepals, the shorter peduncles, and the fewer flowers in each cyme.

Jacquemontia mexicana (Loes.) Standl. & Steyerm., comb. nov. *Aniseia mexicana* Loes. Verh. Bot. Ver. Brandenb. 59: 155. 1917.

BORAGINACEAE

Beurreria Quirosii Standl., sp. nov.—Frutex vel arbuscula, ramulis gracilibus fuscis lenticellatis, glabris vel minute adpresso-puberulis; folia inter minora petiolata crasse membranacea, petiolo 5–10 mm. longo; lamina late ovata, elliptica vel rotundato-ovovata 3.5–7.5 cm. longa 2.5–3.5 cm. lata, apice subacuta usque rotundata, basi acuta vel obtusa, interdum subabrupte angustata, supra scaberula vel glabrata, subtus sparse puberula vel glabrata, ad costam dense breviter pilosa; inflorescentia terminalis pedunculata pauci-flora, floribus sessilibus aggregatis; calyx anguste campanulatus 10–12 mm. longus basi obtusus glaber, lobis triangulari-ovatis 3–4

mm. longis acutis; corolla magna extus sat dense breviter villosula, tubo ca. 3.5 cm. longo fauce 6 mm. lato, lobis late ovatis vel fere rotundatis obtusis 12–14 mm. longis patentibus intus puberulis; fructus late ovoides 2.5 cm. longus 1.5 cm. latus basi late rotundatus vel cordatus, apice subito acuminatus, segmentis siccis et expansis cordatis marginibus tenuibus late alatis.—Costa Rica: Prov. Punta-renas: Manzanillo, July, 1937, *M. Quirós* C. 740 (type in Herb. Field Mus.). San Lucas, July, 1934, *J. M. Orozco* 348. Between Bagaces and Cañas, May, 1932, *A. M. Brenes* 15604. Near Lepante, June, 1932, *Brenes* 15703. Port Parker, July 4, 1932, *John Thomas Howell* (Herb. Calif. Acad. Sci.).

The fresh flowers are described as creamy yellow. This shrub was reported in *Flora of Costa Rica* as *B. cumanensis* (Loefl.) O. E. Schulz, the material then available consisting of a single specimen in fruit, and not distinguishable from that species of the coast of northern South America. Recent collections show that *B. Quirosii*, although resembling *B. cumanensis* in its fruit, is quite different in flower characters. In the latter the flowers are much smaller, the calyx half as large, and the corolla with a relatively short tube.

SCROPHIULARIACEAE

Capraria frutescens (Mill.) Standl., comb. nov.—*Erinus frutescens* Mill. Gard. Dict. ed. 8. no. 4. 1768. *C. saxifragaeifolia* Cham. & Schlecht. Linnaea 5: 105. 1830.

Castilleja altorum Standl. & Steyerl., sp. nov.—Subgenus *Hemichroma*. Herba erecta perennis, caulis simplicibus vel parce ramosis, ramis erectis, pilis brevibus vel longis laxis albis villosis, interdum glabratibus, dense foliatis, internodiis brevibus; folia infima anguste lanceolato-oblonga 1–2 cm. longa 2.5–5 mm. lata obtusa sessilia serrata vel laciniato-dentata, mediana paullo latiora saepe profundius laciniata, suprema profunde laciniata, sat dense villosula vel interdum glabra; flores spicati, spicis brevibus pauci- vel multifloris usque 5.5 cm. longis, floribus sessilibus vel usque 2 mm. longe pedicellatis; bracteae coccineae, inferiores superne laciniato-lobatae, segmentis lateralibus brevibus linearibus, medio late obtuso vel rotundato, superiores late ovatae obtusissimae integrae; calyx 16–20 mm. longus puberulus vel breviter villosulus, antice profunde fissus, postice breviter fissus, lobis brevissime bilobatis; corolla 2–3 cm. longa, galea angustissima incurva dorso villosula; capsula late oblonga ca. 1 cm. longa.—Guatemala: Dept. Huehuetenango: Open

alpine meadows, top of Cerro Chemalito, Sierra de los Cuchumatanes, 3.5 miles west of Santa Eulalia, alt. 3,100–3,150 meters, August, 1942, Julian A. Steyermark 49908 (type in Herb. Field Mus.). Alpine areas in vicinity of Tunimá, 3,400–3,500 meters, Steyermark 48415, 48414.

The last collection cited has pale orange bracts; in the other two they are scarlet and green. Apparently an isolated and local endemic, not matched by any Mexican species of which we have seen material. Among the few Guatemalan species it may be recognized at once by the small, rather crowded leaves which are serrulate or laciniate-dentate. In the other species the leaves are either entire or deeply pinnatisect, at least in part.

Castilleja communis Benth. forma *Johnstoniae* Standl., f. nov.—A forma typica speciei non nisi bracteis apice pallide luteis vel ochroleucis differt.—Guatemala: Dept. Escuintla: Between Río Jute and Río Pantaleón, on road between Escuintla and Santa Lucia Cotz., in moist field, January 24, 1939, Paul C. Standley 63500 (type in Herb. Field Mus.).

In the common and typical form of the species the bracts are tipped with bright red or scarlet. Forma *Johnstoniae* has green bracts that are tipped with pale yellow or cream color. It has been collected in several departments of Guatemala and probably may be found throughout the range of the species. This plant is named for Mrs. John R. Johnston, to whom the writer is deeply indebted for kindly hospitality during his two visits to Guatemala.

MARTYNIACEAE

Martynia confusa (Van Eseltine) Standl. & Steyermark, comb. nov. *Proboscidea confusa* Van Eseltine, N. Y. Agr. Expt. Sta. Techn. Bull. 149: 13. f. 4. 1929.

RUBIACEAE

Psychotria altorum Standl. & Steyermark, sp. nov.—Subgenus *Mapouria*. Frutex 1.5–3.5 m. altus ramosus, ramis gracilibus glabris; stipulae caducae distinctae usque 12 mm. longae ferrugineae ovatae vel oblongo-ovatae acuminatae vel apice breviter bilobae, lobis attenuatis ciliatis; folia breviter petiolata, petiolo crassiusculo 5–10 mm. longo vulgo marginato; lamina oblongo-oblanceolata vel anguste oblanceolata 9–12 cm. longa 2–3.5 cm. lata acuta vel obtusa, basin versus longe sensimque attenuata, glabra, supra in sicco

cinereo-viridis, costa prominente, nervis manifestis sed non elevatis, subitus fere concolor, costa crassiuscula prominula, nervis lateralibus utroque latere ca. 10 teneris angulo lato adscendentibus arcuatis; inflorescentia terminalis ovoideo-paniculata multiflora 1.5–5 cm. longe pedunculata erecta, usque 5.5 cm. longa et 5 cm. lata, ramis basalibus ca. 4 divergentibus vel reflexis brevibus crassiusculis glabris, bracteis caducis, floribus dense cymoso- vel umbellato-aggregatis sessilibus vel breviter crasseque pedicellatis; calyx cum hypanthio 2 mm. longus, calyce campanulato hypanthio crasse columnari paullo longiore brevissime remote dentato vel subintegro; corolla alba ca. 5 mm. longa extus glabra, in alabastro apice subtruncata et subangulata, fauce non barbata, lobis oblongis obtusis recurvis tubo fere duplo brevioribus intus glabris; stylus breviter exsertus, apicibus tantum antherarum exsertis; fructus pallide aurantiacus vel ruber subglobosus 6 mm. altus basi et apice rotundatus, pyrenis dorso grosse costatis.—Guatemala: Dept. Quezaltenango: Montaña Chicharro, southeastern slopes of Volcán de Santa María, 2–4 miles south of Santa María de Jesús, 1,400–1,500 meters, January, 1940, Julian A. Steyermark 34302 (type in Herb. Field Mus.). Southern slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, 1,300–1,500 meters, Steyermark 33690. Above Mujuliá, 1,800 meters, damp dense mixed forest on white sand slopes, 1,800 meters, Standley 85583. Along old road between Finca Pirineos and Patzulín, 1,200–1,400 meters, Standley 86991, 87008. Dept. Suchitepéquez: Southern slope of Volcán de Atitlán, 1,620 meters, in forest, Skutch 1486. Dept. San Marcos: Northwestern slopes of Volcán de Tajumulco, 6 miles southwest of Tajumulco, 2,300–2,800 meters, Steyermark 36714. Volcán de Tajumulco, Cerro de Mono, 1,400–1,700 meters, Steyermark 37388.—Mexico: Chiapas: Volcán de Tacaná, 2,800 meters, Matuda 2926.

A relative of *P. flava* Oerst., of Guatemala and southern Mexico, which differs in its much larger, thicker leaves and usually hirtellous panicle branches.

Psychotria clivorum Standl. & Steyermark, sp. nov.—Subgenus *Mapouria*. *P. limonensis* var. *angustifolia* Standl. Field Mus. Bot. 17: 282. 1937.—Frutex 1.5–4.5 m. altus ramosus, ramis subteretibus in statu vivo viridibus in sicco vulgo fuscis, glabris, internodiis brevibus vel elongatis; stipulae caducae usque 1.5 cm. longae ovales vel late ovatae membranaceae ferrugineae glabrae, apice obtusae vel rotundatae et abrupte breviter acuminatae, acumine ipso breviter bilobo; folia magna breviter petiolata herbacea, petiolo 1–2.5

cm. longo saepe fere ad basin marginato; lamina oblongo-oblanceolata vel anguste oblanceolata 13–30 cm. longa 4–5.5 cm. lata, acuminata vel longiacuminata, basin versus longe sensim attenuata, glabra, supra in sicco griseo-viridis, nervis manifestis sed non elevatis, subtus fere concolor, costa tenera prominente, nervis lateralibus utroque latere ca. 20 tenuibus angulo semirecto vel latiore adscendentibus subarcuatis pallidis; inflorescentia terminalis erecta ca. 5 cm. longe pedunculata paniculata dense vel sublaxe multiflora, 4–7.5 cm. longa et usque 7 cm. lata, ramis infimis verticillatis brevibus crassiulus saepe subreflexis dense minute puberulis, bracteis parvis caducis, floribus cymose aggregatis sessilibus vel brevissime pedicellatis; calyx cum hypanthio 1–1.5 mm. longus, minute puberulus vel fere glaber, calycis limbo ca. 1.5 mm. lato remote brevissime dentato vel subtruncato, dentibus late triangularibus; corolla alba infundibuliformis vix ad 4 mm. longa extus glabra, in alabastro apice late rotundata, lobis reflexis oblongo-ovatis obtusis intus glabris tubo duplo brevioribus, fauce non barbato; apices tantum antherarum exserti, stylo breviter exerto; fructus ovali-globosus glaber ruber 5–6 mm. longus basi et apice obtusus vel subrotundatus, pyrenis dorso grosse obtuseque costatis.—Guatemala: Dept. Suchitepéquez: Finca Mocá, in forest, alt. 1,020 meters, January 7, 1935, Alexander F. Skutch 2073 (type in Herb. Field Mus.). Dept. Quetzaltenango: Between Finca Pirineos and Finca Soledad, southern slopes of Volcán de Santa María, 1,300–1,400 meters, Steyermark 33543. Dept. San Marcos: Río Mopá, below Rodeo, 600 meters, Standley 68772, 68783. Finca El Porvenir, along Río Cabús, above Potrero Matasán, Volcán de Tajumulco, 1,000–1,300 meters, Steyermark 37628.

From *P. limonensis* Krause the present species differs in its pedunculate rather than sessile inflorescence, as well as in its much narrower leaves. Similar also is *P. flava* Oerst. which has usually hirsutulous panicle branches and usually thicker, yellowish green leaves (in the dry state).

Randia crescentioides Standl., sp. nov.—Ut videtur inermis, ramis crassis nodosis, foliis ad nodos dense congestis numerosis, ramulis gracilibus dense pilis albidis adscendentibus pilosulis; folia petiolata membranacea in sicco laete viridia, petiolo usque 2.5 cm. longo fere ad basin marginato; lamina spathulato-ovata vel spathulato-rotundata 1.5–4.5 cm. longa 1.5–2.5 cm. lata apice late rotundata, interdum brevissime apicata, basi vulgo longe angusteque attenuata, interdum abrupte breviterque decurrentis, supra glabra,

subtus concolor, tantum ad costam breviter pilosula; bacca sessilis magna subglobosa fere laevis glabra ca. 3.5 cm. longa et fere 3 cm. lata, basi et apice late rotundata; sepala ad apicem fructus persistentia (bene conservata non visa) ciliata.—Costa Rica: Prov. Guanacaste: Port Parker, July 4, 1932, *John Thomas Howell* (type in Herb. Calif. Acad. Sci.; fragmentary specimen in Herb. Field Mus.).

Unfortunately no flowers are available, for they would help in determining the position of this species. No other North American species has the combination of large fruit and peculiar foliage that characterizes this plant. In general appearance it much suggests *R. Thurberi* Wats., of western Mexico, which might well reach the Pacific coast of Central America, but that has a smaller fruit and leaves clearly different in several respects, especially in their usually emarginate apices. The dense clusters of bright green leaves, crowded at the ends of short stubby branches, suggest *Crescentia*, hence the specific name.

CAPRIFOLIACEAE

***Viburnum brunnescens* Standl. & Steyermark, sp. nov.**—Section *Disjuncta*. Arbor 9–12-metralis, ramulis crassis dense pilis stellatis sessilibus brunnescensibus multiradiatis tomentosis, tomento subadpresso; folia membranacea 1.5–2.5 cm. longe petiolata, petiolo dense stellato-tomentoso; lamina late ovali-ovata, rotundato-ovata vel rhombea 9–14 cm. longa 6.5–10 cm. lata, acuta vel acuminata, basi subrotundata vel saepius late cuneata, in fere toto margine grosse dentata, supra viridis dense molliterque pilis minutis stellatis breviramosis vestita, nervis subimpressis, subtus brunnescens densissime pilis mollibus sessilibus vel breviter stipitatis multiradiatis stellato-tomentosa, costa crassa elevata, nervis lateralibus utroque latere ca. 9 rectis in dentes terminantibus, inferioribus approximatis; pedunculi crassi erecti 5–7 cm. longi, cymis 9–11 cm. latis 5–6-radiatis, radiis ca. 3 cm. longis suberectis arcte minuteque stellato-pubescentibus, pedicellis usque 3.5 mm. longis, bracteis deciduis; calycis tubus 2 mm. longus densissime stellato-tomentosus, dentibus vix ad 1 mm. longis ovatis obtusis stellato-puberulis; corolla fere 4 mm. longa breviter strigosa et minute stellato-puberula; stamina exserta; stylus glaber.—Guatemala: Dept. Huehuetenango: Wet cloud forest, Cruz de Limón, between San Mateo Ixtatán and Nucá, Sierra de los Cuchumatanes, 2,600–3,000 meters, July 31, 1942, *Julian A. Steyermark* 49855 (type in Herb. Field Mus.).

Related to *V. jucundum* Morton as closely as to any species, probably, but in that the pubescence consists of appreciably larger and softer, mostly fulvescent hairs, and the leaves are broadly rounded or subcordate at the base.

***Viburnum detractum* Standl. & Steyerm., sp. nov.**—Section *Disjuncta*. Arbor 7.5 m. alta, ramulis crassis brunneis, novellis primo sparse laxe stellato-pilosus, pilis inaequalibus parvis et multiradiatis vel longis et pauciradiatis vel interdum simplicibus; folia tenuiter membranacea breviter petiolata, petiolo 1.5–2 cm. longo ut ramulis induto; lamina suborbicularis vel rotundato-ovata vulgo 12–15 cm. longa et 9–13 cm. lata obtusa vel breviter acutata, basi late rotundata et breviter cordata, supra viridis glabra vel pilis paucis pauciradiatis hinc inde conspersa, subtus paullo pallidior tantum ad nervos venasque pilis paucis remotis simplicibus vel pauciradiatis induta, inter venas glabra, secus costam saepe dense barbata; cymae densiflorae 5 cm. latae et ultra crasse 3 cm. longe pedunculatae, bracteis basalibus caducis, superioribus linearibus vel lanceolatis subfoliaceis, radiis densissime pilis stellatis multiradiatis velutino-tomentosis.... Guatemala: Dept. Quezaltenango: Volcán de Zunil, upper forested slopes above Fuentes Georginas, alt. about 3,000 meters, January 22, 1940, Julian A. Steyermark 34590 (type in Herb. Field Mus.). Dept. San Marcos: Barrancos south and west of Tajumulco, northwestern slopes of Volcán de Tajumulco, 2,300–2,500 meters, February, 1940, Steyermark 36582 (sterile).

Of this plant there are available only two collections, one in bud, the other sterile. The foliage is so well marked that there is no doubt that a distinct species is represented, and after all is said, so far as the Central American species of *Viburnum* are concerned, most of the distinguishing characters are those of the leaves. The relationship of this plant is with *V. jucundum* Morton, but it differs from all other species of the section *Disjuncta* in having the leaves glabrous beneath except for a few scattered weak hairs on the nerves and veins.

***Viburnum euryphyllum* Standl. & Steyerm., sp. nov.**—Section *Disjuncta*. Arbor 9-metralis, ramulis crassis densissime tomento subadpresso brunnescenti-griseo obtectis; folia firme membranacea breviter petiolata, petiolo ca. 1.5 cm. longo crasso dense adpresso-tomentoso; lamina rotundato-ovata vel suborbicularis 9–11 cm. longa 7–10 cm. lata acuta vel obtusa, basi late rotundata vel emarginata, supra in sicco griseo-viridis dense pilis minutis pauciradiatis conspersa, nervis venisque impressis, subtus albida densissime mol-

literque stellato-tomentosa, pilis parvis sessilibus multiradiatis, remote denticulata, nervis lateralibus utroque latere ca. 6 elevatis fere rectis in dentes terminantibus, inferioribus 4 approximatis; pedunculi crassi 1-3.5 cm. longi, bracteis deciduis; cymae ca. 10 cm. latae 6-7-radiatae, radiis crassis rectis dense adpresso stellato-tomentosis 1.5-3 cm. longis, floribus breviter pedicellatis vel sessilibus; calycis tubus 2 mm. longus densissime albido-tomentosus, lobis vix 1 mm. longis late ovatis obtusis stellato-puberulis; corolla vix ultra 2.5 mm. longa extus dense vel sparse pubescens; stylus glaber; stamina exserta.—Guatemala: Dept. Huehuetenango: Trail between Tunimá and Quisil, Sierra de los Cuchumatanes, alt. 2,500 3,100 meters, July 8, 1942, Julian A. Steyermark 48425 (type in Herb. Field Mus.).

This species also is related to *V. jucundum* Morton, but in that the hairs of the upper leaf surface are much larger, the leaves relatively narrower, and green, not whitish, on the lower surface.

Viburum hondurens Standl., sp. nov.—Section *Disjuncta*. Frutex vel arbor 2 9-metralis, ramis gracilibus dense albido-tomentosis, pilis sessilibus mollibus stellatis multiradiatis albidis; folia breviter petiolata membranacea, petiolo crasso ca. 1 cm. longo; lamina lanceolato-oblonga vel ovato-lanceolata 8-15 cm. longa 2.5-7 cm. lata longiacuminata, basi anguste rotundata vel obtusa, integra, supra viridis saepe lucida, in statu adulto glabra, subtus pallidior sparse dense stellato-tomentosa, pilis parvis mollibus sessilibus pauci- vel multiradiatis albidis vel pallide brunnescentibus, nervis lateralibus supra subimpressis subtus prominentibus utroque latere 5-6 arcuatis prope marginem conjunctis et non excurrentibus; cymae 4-7 cm. longe pedunculatae 8-10 cm. latae ca. 7-radiatae, bracteis basalibus deciduis, interdum numerosis et foliaceis, lanceolatis vel lineari-lanceolatis 3-3.5 cm. longis, radiis molliter stellato-tomentosis; calycis tubus 2 mm. longus densissime stellato-pilosus, lobis ca. 0.8 mm. longis ovatis obtusis stellato-pubescentibus; corolla 2.5 mm. longa extus glabra vel pilis perpaucis minutis simplicibus vel pauciradiatis conspersa; stylus brevis crassus glaber; stamina bene exserta; fructus immaturus ovalis 5-6 mm. longus stellato-pilosulus.—Honduras: Dept. Comayagua: Open mountain forest, Meambar, alt. 600 meters, July, 1933, J. B. Edwards P-636 (type in Herb. Field Mus.). El Achote, near Siguatepeque, 1,500 meters, February, 1928, Standley 56154 (sterile); in 1936, Yuncker, Dawson & Youse 5824, 5969, 5833.

All these collections were determined originally as *V. discolor* Benth. They are related to that species, but still more closely to *V. disjunctum* Morton, of Guatemala. The latter differs in having abundant minute stellate hairs on the upper leaf surface and in several other respects.

CUCURBITACEAE

Ahzolia Standl. & Steyerl., gen. nov.—Herbae scandentes fere glabrae; folia longipetiolata membranacea basi profunde cordata angulata vel breviter 5-lobata, interdum fere integra, marginibus remote minuteque denticulatis; cirrhi 3-fidi; flores dioici(?) 4-5-meri viridescenti-albi parvi, masculi racemosi vel saepius anguste paniculati, paniculis vulgo foliis longioribus multifloris, pedicellis capillariibus; receptaculum pateriforme 8-10-radiatum sub apice 8-10-foveolatum, dentibus minutis vel subnullis; corolla fere rotata ad medium 4-5-lobata, lobis late ovatis extus interdum tomentulosis; filamenta usque ad medium in columnam gracilem coalita, supra medium radiatim divaricata, antheris 4-5 suborbicularibus 2-locularibus, loculis flexuosis; flores feminei non visi; fructus magnus carnosus monospermus indehiscens obovoides laevis vel plus minusve sulcatus, in sicco 10-cristatus.

A single species is known, described originally, without fruit, as a species of *Microsechium*. Presumably this new genus belongs in that alliance, but it differs conspicuously in its large fruits, which are suggestive of those of *Sechium*, so much so that it was supposed at first by the writers that the plant might be the wild form of that commonly cultivated plant. The fruits of *Microsechium* also are aculeate, and in that genus the flowers are mostly or all 4-parted, while in *Ahzolia* they are typically 5-parted. It is presumed that the flowers are dioecious, since no pistillate flowers are present on any of the numerous staminate specimens at hand.

The generic name is derived from Ahzol, the name of one of the leaders of the Guatemalan army of Tecum Umán, who died in the bloody battle at the Río Xequijel near Olintepeque, where the valiant Indian hosts were overwhelmed by Pedro de Alvarado and his Mexican mercenaries.

Ahzolia composita (Donn. Smith) Standl. & Steyerl., comb. nov. *Microsechium compositum* Donn. Smith, Bot. Gaz. 35: 2. 1903.—The type was collected at Malpaís, Santa Rosa, Guatemala. The following additional collections are now available: Guatemala:

Dept. Santa Rosa: Río Panal, lower slopes of Volcán de Tecuam-burro, *Standley* 78581. Dept. Escuintla: Between Río Jute and Río Pantaleón, on road between Escuintla and Santa Lucía Cotz., *Standley* 63566, 63514, 63550. Dept. Suchitepéquez: Lower slopes of Volcán de Zunil, *Steyermark* 35417. Dept. Quezaltenango: Vuelta del Tigre, below Santa María Jesús, *Standley* 68157, 68166. Finca Pirineos, *Standley* 68392. Colombia, *Skutch* 2042.—Mexico: Escuintla, Chiapas, *Matuda* 2151.

This vine is abundant in many ravines of the Pacific slope of Guatemala, often forming dense tangles of stems over tall trees. The large fruits, similar to those of *Sechium*, are borne in great quantities, and cover the ground beneath the vines during the dry season. They wither very slowly and retain their succulent but hard flesh for a long time. The local name is Huisquil de ratón, and in Quezaltenango the Indian name Ixmaxín is given to the plant and its fruit.

Corallocarpus guatemalensis Standl. & Steyermark, sp. nov.—*Frutex elongatus ramosus, caulibus crassis lucidis, internodiis longis; petioli 2.5–5 cm. longi crassi glabri vel glabratii; lamina ambitu rotundo-cordata 6–12 cm. longa 6.5–11 cm. lata apice obtusissima, basi profunde cordata sinu angusto latove, integra, interdum obtuse 3-angulata, supra viridis minute densissime scabra, tactu aspera, subtus ubique dense albo-tomentosa, basi pedatim 5-nervia.*—Guatemala: Dept. Zacapa: In hedge, common, vicinity of Zacapa, alt. 200 meters, October, 1940, *Paul C. Standley* 74623 (type in Herb. Field Mus.). Dept. Chiquimula: Rocky outcrops along gorge of Río Chiquimula, between Santa Bárbara and Petapilla, 4–6 miles north of Chiquimula, alt. 350–420 meters, *Steyermark* 30258.

The two collections unfortunately are sterile, but there is little doubt that a distinct and undescribed species is represented, of which it is not likely that good material will be obtained soon. The plant is similar to *C. hypoleucus* Standl. of western Mexico, but in that the leaves are more conspicuously lobate and they are glabrous on the upper surface.

Cyclanthera Steyermarkii Standl., sp. nov.—*Herba scandens ramosa, caulibus glabratissimis vel in statu juvenili sparse villosulis; folia breviter petiolata tenuia breviter petiolata, petiolo 1–5 cm. longo glabratissimis, apice puberulosa vel breviter villosulosa; lamina ambitu late ovato-cordata vel triangulari-cordata 8–14 cm. longa et 6–10 cm. lata acuminata, basi profunde cordata, breviter 3-loba vel inter-*

dum fere elobata et tantum angulata, marginibus remote denticulatis, supra minute scaberula tactu vix asperula, subtus fere glabra laevis; cirrhi 2-fidi; racemi masculi vulgo petiolis breviores vix ultra 6 cm. longi remote multiflori fere ad basin floriferi, pedicellis filiformibus plerumque 3-4 mm. longis patulis fere glabris; receptaculum glabrum fere rotatum vix ultra 2 mm. latum, dentibus minutissimis vel obsoletis; corolla lutescenti-viridis extus fere glabra, segmentis ovato-triangularibus subacutis 2 mm. longis patentibus; pedunculus femineus ca. 3.5 cm. longus crassiusculus glaber; ovarium dense echinatum gibbosum longirostratum; corolla floris feminei ca. 4 mm. lata; fructus 2-3 cm. longus ubique densissime echinatus, rostro usque ad 1 cm. longo, aculeis rigidis 2-3 mm. longis inferne valde dilatatis.—Guatemala: Dept. Quezaltenango: In forest, Volcán de Santa María, above Santa María de Jesús, alt. about 2,300 meters, January, 1940, Julian A. Steyermark 34047 (type in Herb. Field Mus.); also no. 34039. Cumbre de Tuilacán, southwest of San Martín Chile Verde, 2,400 meters, Standley 67777, 67773. Mountains southeast of Palestina, 2,700 meters, Standley 66342. Dept. Chimaltenango: Slopes of Volcán de Acatenango, in *Chiranthodendron* forest, 2,700 meters, Standley 61828, 61918.

Related to *C. explodens* Naud., which also occurs in Guatemala, but in that the fruits are borne on short thick peduncles, and they bear only a few, much longer prickles, the basal portion of the fruit being usually unarmed.

Elaterium macrophyllum Standl. & Steyermark, sp. nov.—
 Herba scandens elongata laxe ramosa, caulis sat dense pilis albis laxis villosulis vel subtomentosis; folia tenuiter membranacea supra intense viridia subtus paullo pallidiora, petiolis gracilibus villosulis 2-6 cm. longis sustenta, ambitu rotundo-ovata vel trianguli-cordata vulgo 7-12 cm. longa et 6-9.5 cm. lata, acuta vel acuminate, margine subintegro vel remote denticulato, subintegra vel saepius obtuse angulata, supra scaberula vel fere glabra, subtus dense molliterque villosula vel interdum subtomentosa, sinu basali rotundato et vulgo clauso; inflorescentiae masculae (valde immaturae tantum visae) petiolis breviores ca. 4-florae ut pedicelli graciles inaequales dense albo-villosae; pedunculus femineus ca. 12 mm. longus albo-tomentosus; ovarium oblique ovoidem 4 mm. longum densissime setulosum fere tomentosum; receptaculum 15 mm. longum apice 4 mm. latum sparse pubescens vel villosulum prope medium 2 mm. latum; sepala filiformia 1-2 mm. longa patentia vel reflexa; petala lineari-attenuata 12 mm. longa minute papillosa.—Guatemala: Dept.

Baja Verapaz; Thickets above Panzal, alt. 1,400 meters, April, 1907, *H. von Tuerckheim* II.1728 (type in Herb. Field Mus.). Dept. Retalhuleu: Along Río Samalá near San Felipe, 500 meters, *Steyermark* 34552. Dept. Suchitepéquez: Finca Las Nubes, lower slopes of Volcán de Zunil, 500–800 meters, *Steyermark* 35391. Dept. Quetzaltenango: Between Finca Pirineos and Los Positos, lower slopes of Volcán de Santa María, 1,300–1,500 meters, *Steyermark* 33737. Between Colombia and Las Mercedes, 600–900 meters, *Standley* 87970. Dept. San Marcos: Volcán de Tajumulco, 1,300–1,500 meters, *Steyermark* 37504, 37663.

A close relative of this plant is the Mexican *E. longisepalum* Cogn., but in that the stems and lower leaf surfaces are glabrous. The Guatemalan plant has larger and more densely pubescent leaves than most species of the genus. While most of the collections cited above are sterile, they are easily associated by their remarkably uniform and distinctive foliage.

Sicydium glabrum Standl. & Steyer., sp. nov.—Herba scandens, caulis gracilis obtuse angulatis glabris vel glabratiss; folia 2–2.5 cm. longe petiolata firme membranacea ovata vel oblongo-ovata 7–11 cm. longa 3–6 cm. lata longiacuminata, basi profunde cordata, sinu lato aperto, integra, pedato-7-nervia, laxe venosa, utrinque glabra vel glabrata, subtus punctata; panicula mascula diffuse ramosa 8–14 cm. longa, ramis gracillimis saepe reflexis, basi bractea foliis conformi sed reducta sustenta, ramis vulgo fere omnino glabris, pedicellis capillaribus usque ad 3 mm. longis glabris vel minutissime puberulis supra medium articulatis; flores fere glabri 3 mm. lati; sepala late ovata obtusa; corollae segmenta ovato-triangularia viridia fere 2 mm. longa ciliolata; filamenta antheris aequilonga; inflorescentia feminea laxe ramosa 15 cm. longa, pedicellis crassis brevibus; fructus globosus 7 mm. longus, basi abrupte angustatus.—Guatemala: Dept. Quetzaltenango: Montaña Chicharro, lower southeastern slopes of Volcán de Santa María, alt. 1,400–1,500 meters, January 17, 1940, Julian A. Steyermark 34273 (type in Herb. Field Mus.). Between Finca Pirineos and Los Positos, 1,300–1,500 meters, *Steyermark* 33756. Between Finca Pirineos and Finca Soledad, 1,300–1,400 meters, *Steyermark* 33573. Dept. Suchitepéquez: Southwestern lower slopes of Volcán de Zunil, 1,200–1,300 meters, *Steyermark* 35207.

Of the two other Guatemalan species, *S. tamnifolium* HBK. is distinguished by its densely and softly pilose leaves and *S. Tuerck-*

heimii Donn. Smith by its more or less coriaceous leaves, very scabrous and rough to the touch on the upper surface.

Sicyos guatemalensis Standl. & Steyerm., sp. nov.—Scandens, caule gracili sparse albo-villoso ramoso; petioli foliorum superiorum 1 cm. longi vel breviores, foliorum inferiorum magis elongati; lamina ambitu rotundo-cordata ca. 6 cm. longa et aequilata basi profunde cordata, sinu lato aperto 1.5 cm. profundo, breviter 3-5-loba vel subintegra, lobis ovato-triangularibus acutis vel caudato-acuminatis, terminali longiore, marginibus repando-dentatis, utrinque sparse villosula et plus minusve scabra; cirri 2-fidi vel interdum simplices; pedunculi masculi 4-10 cm. longi pilis longis albis sparse villosi, apice racemose ca. 10-flori, pedicellis usque ad 5 mm. longis villosis; receptaculum late campanulatum basi late rotundatum sparse laxe villosum, dentibus 5 brevibus suberectis; corolla ca. 8 mm. lata subrotata breviter 5-loba, lobis 5-nerviis late triangulari-ovatis subacutis intus dense glandulosis extus dense longivillosis; filamenta brevia glabra; pedunculus femineus fere nullus pauciflorus, floribus sessilibus vel subsessilibus; fructus ovoides inermis 5-6 mm. longus sparse longivillosus vel in statu adulto glabratus subacutus.—Guatemala: Dept. Jalapa: Vicinity of Jalapa, alt. 1,300 meters, November 28, 1939, Julian A. Steyermark 32140 (type in Herb. Field Mus.). Near Jalapa, January, 1908, W. A. Kellerman 8083.

In Cogniaux's key to the species of *Sicyos* in DeCandolle's *Monographiae Phanerogamarum*, this runs at once to *S. gracillimus* Cogn., a Peruvian species that differs in several respects from the Guatemalan plant. The subsessile upper leaves distinguish it from all or most of the Mexican and Central American species. The fruiting heads are almost wholly concealed by the large subtending leaves.

Tecunumania Standl. & Steyerm., gen. nov.—Herbae scandentes scaberulae; folia longipetiolata 5-lobata basi profunde cordata, lobis remote et minutissime denticulatis, petiolo eglanduloso apice dense viloso; cirri 2-fidi; flores dioeci majusculi lutei, masculi in axillis solitarii pedunculati; receptaculum campanulatum vel anguste campanulatum; sepala 5 linearia remota basi vix dilatata valde elongata et receptaculo vulgo longiora; corolla sparse villosula vel glabrata profunde 5-lobata, segmentis obovatis patentibus apice rotundatis et apiculatis intus glabris 5-nerviis; stamina 3, filamentis in columnam conicam coalitis; antherae inclusae in capitulum subglobosum cohaerentes 2-loculares, loculis elongato-linearibus tri-

plicatis; flores feminei ignoti; fructus magnus subglobosus longipedunculatus laevis basi et apice rotundatus; semina numerosa parva horizontalia vix marginata compressa ovalia pallide ochracea laevia, basi et apice rotundata vel obtusissima.—A single species is known, native in mountain forests of western Guatemala. It is referable to the tribe *Cucumerineae*, and has some relationship with the African genus *Adenopus*, but it bears no close similarity to any of the other cucurbitaceous genera of Central America. The generic name is derived from that of Tecún Umán, hero and leader of the Indians of western Guatemala, who fought so heroically to resist the Spanish invaders, but were finally overthrown and dispersed in a bloody battle near the site of the present city of Quezaltenango. The river on whose banks the battle was fought has ever since been known by an Indian name signifying “River of Blood” because of the carnage of that eventful day in Central American history.

Tecunumania quetzalteca Standl. & Steyermark, sp. nov.—
Herba scandens elongata, caulis crassiusculis glabris ad nodos dense villosis; folia longipetiolata, petiolo 4-8 cm. longo glabro, apice densissime lanato vel villoso; lamina 9-19 cm. longa et fere aequilata, ad medium vel saepe brevius 5-lobata, sinu basali 2-3 cm. profundo et vulgo latiore, membranacea, supra sparse scaberula, subtus vix pallidior densius minuteque scaberula, lobo terminali ovato vel triangulari, acuto vel acuminato, lobis lateralibus multo brevioribus, acutis vel obtusis, extimis saepe basi auriculatis, marginibus subintegris vel remote et minutissime denticulatis; pedunculi masculi 1.5-3 cm. longi glabri; receptaculum glabrum 10-13 mm. longum ca. 8 mm. latum costato-nervosum; sepala linearia 15-20 mm. longa patentia vel interdum reflexa vix ultra 1 mm. lata attenuata viridia; corolla fere rotata 5 cm. lata, lobis latis breviter mucronatis vel cuspidatis; tubus staminalis ca. 7 mm. longus, capitulo antherarum ca. 8 mm. longo; fructus subglobosus intense viridis 7.5 cm. longus et fere aequilatus laevis lucidus; semina ca. 6 mm. longa atque 4 mm. lata.—Guatemala: Dept. San Marcos: Wet forest, Finca Vergel, near Rodeo, alt. about 900 meters, March 15, 1939, Paul C. Standley 68931 (type in Herb. Field Mus.). Southern slopes of Volcán de Tajumulco, above Finca El Porvenir, Steyermark 37392. Dept. Quezaltenango: Lower southern slopes of Volcán de Santa María, 1,300-1,500 meters, Steyermark 33727, 33625. Dept. Suchitepéquez: Lower slopes of Volcán de Zunil, 1,200-1,300 meters, Steyermark 35200, 35225.

The local names are Melocotón and Melocotón de monte, the former term being usually applied in Guatemala to *Sicana odorifera*, a cultivated plant of this family. The vine is abundant in many places in the dense wet mixed forests of the mountains of the Occidente of Guatemala, and it is to be expected in adjacent Chiapas.

LOBELIACEAE

Lobelia laxiflora HBK. forma *lutea* Standl. & Steyermark, f. nov.—A forma typica speciei corollis luteis vel pallide luteis tantum differt.—Guatemala: Moist thicket above Santa María de Jesús, Quetzaltenango, alt. 1,650 meters, March 1, 1939, *Paul C. Standley* 67195 (type in Herb. Field Mus.). Moist forest, Volcán de Agua, Dept. Sacatepéquez, 2,250–3,000 meters, February, 1939, *Standley* 65175.

This color form, strikingly different from the usual plants with red and yellow flowers, appears to be rare, and only two plants were noted during two seasons spent by the senior author in Guatemala.

COMPOSITAE

Ageratum chortianum Standl. & Steyermark, sp. nov.—Frutex 1.3 m. altus, ramulis dense pilis brevibus antrorsis adpressis griseo-velutinis; folia opposita 5–8 mm. longe petiolata; lamina lanceolata 3.5–6 cm. longa 1–1.7 cm. lata subcordacea penninervia, nervis 2–3-jugis, obtusa vel subacuta, basi cuneata, integra, supra rugoso-reticulata et sparse scaberula, subtus dense griseo-velutina; capitula ca. 10 corymbosa, pedicellis 4–5 mm. longis; involucrum campanulatum 4–5 mm. altum 5–7 mm. latum, bracteis ca. 3-seriatis, extimus brevissimis, anguste lanceolatis vel lineari-lanceolatis, attenuatis, 2–3-costatis, dorso pilis brevibus incurvis adpresso-hirtellis; receptaculum obtuse conicum; corollae pallide lilacinae 2.2–2.5 mm. longae, lobis ovato-lanceolatis 0.4 mm. longis apice minute hirtellis, fauce sparse piloso et glandulis sessilibus consperso; achaenia immatura brunnescentia glabra 2 mm. longa fusiformi-cylindracea 5-angulata; pappus e corona breviter 5-loba 0.2 mm. alta compositus.—Guatemala: Dept. Chiquimula: At base of high bluffs, Montaña Castilla, near Montaña Cebollas, along Río Santa Lucía Saso, southeast of Quezaltepeque, alt. 1,200–1,500 meters, November, 1939, *Julian A. Steyermark* 31269 (type in Herb. Field Mus.).

Related to *A. Standleyi* Robinson, but differing in its longer petioles, longer, lanceolate not ovate leaves, which are penninerved rather than 3-nerved and eglandular on the upper surface, and in the more densely pubescent young stems and lower leaf surfaces.

Cacalia guatemalensis Standl. & Steyermark, sp. nov.—Herba perennis, caule crasso 1.2 m. alto striato glanduloso-puberulo; folia caulina sessilia, supra pallido-viridia subtus albida, ovato-oblonga, usque 25 cm. longa atque 10–13 cm. lata, obtusa, basi subamplexicauli-cordata, ca. 9-loba vel grosse inaequaliter dentata, lobis inaequaliter dentatis, dentibus magnis acutiusculis vel subobtusis, supra puberula et glandulosa, subtus dense albo-lanata; inflorescentia thyrsoido-paniculata, paniculis 8–10 cm. longis 6–8 cm. latis, dense glanduloso-puberulis, pedunculis et pedicellis glandulosotomentulosis 1–2-bracteolatis; capitula numerosa turbinato-cylindracea discoidea 5–9-flora, 9–14 mm. alta 3.5–6 mm. crassa; involucrum 8–10 mm. altum, bracteis exterioribus 1–2 linearibus vel linearilanceolatis 4–5 mm. longis, bracteis principalibus 5 lanceolatis vel linearilanceolatis acutis scariosis dorso glanduloso-puberulis; corollae purpureae 9–10 mm. longae; achaenia glabra elliptico-linearia apice rotundata, basin versus attenuata, straminea, ca. 16-costata; pappi setae breves albae numerosae dense setuloso-serrulatae.—Guatemala: Dept. Jalapa: Summit of Buena Vista, Montaña Miramundo, between Miramundo and Buena Vista, between Jalapa and Lago de Ayarza, alt. 2,000–2,200 meters, December, 1939, Julian A. Steyermark 32823 (type in Herb. Field Mus.).

The species belongs to the group *Odontotrichum* as defined by Rydberg (Bull. Torrey Club 51: 310. 1924). It is related to *C. ampullacea* Greenm. and *C. amplifolia* DC. From *C. ampullacea* it differs in its white rather than tawny pappus, glandular-puberulent involucral bracts and peduncles, glabrous achenes, and thyrsoid rather than corymbose inflorescence. From *C. amplifolia* it differs in its white-lanate lower leaf surface, larger heads in a thyrsoid rather than corymbose inflorescence, and glandular-puberulent bracts, pedicels, and stems.

Gnaphalium Standleyi Steyermark, sp. nov.—Annua acaulis vel subacaulis 1–4.5 cm. alta dense albo-lanata; folia plerumque basalia et rosulata, elliptico-ovata vel oblanceolata 6–18 mm. longa 4–6 mm. lata, apice rotundata, obtusa vel subacuta, saepe breviter nigro-cuspidata, basin versus attenuata, foliis caulinis (interdum nullis) 2–3 utrinque arcte albo-lanatis; capitula parva basi lanata in inflorescentias terminales spicato-fastigiatas aggregata, inflorescentiis 6–25 mm. longis 5–13 mm. latis; involucrum 4-seriatum fulvum lucidum 3.5–4 mm. altum 3 mm. latum profunde campanulatum, bracteis 24–26 apice brunnescensibus 2–3.8 mm. longis 0.9–1.5 mm. latis, exterioribus ovatis acutis, interioribus

ob lanceolatis vel spathulatis subacutis basi lanata excepta glabris; flores hermaphroditici 65–70 angusti 2.3–2.6 mm. longi 0.1–0.2 mm. lati, basin versus sensim dilatati, limbo tubo gracili vix distincto; pappi setae basi ipsa coalitae, ad anthesin 2.5 mm. longae filiformes remote serrulatae; achaenia immatura fusco-brunnea angulata hispidulo-tuberculata 0.8–0.9 mm. longa.—Guatemala: Dept. Huehuetenango: Alpine meadows, region of Chémal, Sierra de los Cuchumatanes, alt. about 3,300 meters, December 28, 1940, *Paul C. Standley* 81097 (type in Herb. Field Mus.). Dept. San Marcos: Upper slopes of Volcán de Tacaná, alt. 4,100–4,400 meters, February, 1940, *Steyermark* 36112.

This diminutive plant belongs to the section *Gamochaeta*, with its combination of hispidulous achenes and its pappus bristles united at their base into a ring. In general appearance it simulates *G. purpureum* L. It may be distinguished from all other Central American and Mexican species by its subacaulescent habit, dwarf size, and small heads in a dense spicate-fastigiate inflorescence.

Hieracium culmenicola Standl. & Steyerm., sp. nov.—Herba perennis, caule 1, 45–60 cm. alto, caudice apice sparse pilis fulvis obtecto; folia radicalia ad anthesin vulgo deficiens ob lanceolata vel lineari-spathulata; caulis 3–4-foliatus sparse et inaequaliter minute lanuginosus, axillis inferioribus densius lanuginosus, superne setulosus atque plus minusve stipitato-glandulosus; folia caulina inferiora mediaque membranacea anguste ob lanceolata vel lineari-lanceolata, infima in petiolum angustata, media sessilia, acuta, apice calloso, 6–17 cm. longa 7–20 mm. lata, utroque margine dentibus 7–9 callosis onusta, supra sparse pilosa vel glabrata, subtus praesertim ad costam sparse vel modice pilosula, interdum glabrata; inflorescentia laxe corymbosa; capitula 2–4 modica 58–80-flora, ramis floriferis 13–30 cm. longis; pedunculi adscendententes 5.5–9 cm. longi dense sordido-tomentulosi, pilis subadpressis incurvis, sparse praesertim superne pilis glanduliferis pilosi; involucrum 3-seriatum 10–11 mm. altum 7–11 mm. in statu fructifero latum, bracteis 3–4, exterioribus brevibus lineari-triangularibus, interioribus lineari-lanceolatis intense viridi-bus ad costam basinque pilis setiformibus adscendentibus nigris 1–2 mm. longis pilosis, marginibus subscariosis; corollae luteae 12–13 mm. longae, lamina 6–7 mm. longa 1.5 mm. lata 5-denticulata, lobis linearibus obtusis glabris, tubo 5–6 mm. longo glabro; achaenia immatura rufo-brunnea ad angulos minute antrorso-hispida, ca. 8-costata; pappi setae sordidae 4.5–5.5 mm. longae barbellatae.—Guatemala: Dept. Quezaltenango: Uppermost ridge of Volcán de

Santo Tomás, alt. 3,000–3,200 meters, January 22, 1940, Julian A. Steyermark 34815 (type in Herb. Field Mus.). Moist pine slopes toward the top of Volcán de Santa María, alt. about 3,900 meters, Steyermark 34154. Dept. San Marcos: Upper south-facing slopes of Volcán de Tajumulco, between Las Canajas and top of the ridge, alt. 3,300–3,900 meters, Steyermark 35895.

This species is characterized by its combination of black-hairy involucral bracts, few heads, and long narrow leaves that are short-pilose or pilosulous.

Hieracium guatemalense Standl. & Steyermark, sp. nov.—Acaulis vel subacaulis perennis caespitosa; rhizoma crassum sublignosum vulgo ramosum, dense inter bases persistentes foliorum fulvo-lanatum; folia radicalia ad anthesin 6–12 linear-lanceolata vel linear-oblanceolata obtusa calloso-apiculata, 4.5–13 cm. longa (basi petioliformi inclusa), 4–8 mm. lata, utroque latere dentibus 4–5 obtusis callosis runcinatis onusta, ad basin petioliformem densissime insigniter fulvo-lanata, lamina firme membranacea, supra intense viridi subtus pallidiore, supra glabra vel glabrata subtus sparse villosa, marginibus inconspicue remoteque ciliolatis; folia caulina 1 vel 0 linearia 1–2 cm. longa 1–2 mm. lata, bracteis caulinis linearibus vel linear-setaceis 4–8 mm. longis 0.1–1.5 mm. latis breviter ciliatis utrinque praesertim basin versus villosis; caulis monocephala gracilis 4–15 cm. longa longivillosa, pilis pro parte sordidis albidis pro parte glanduliferis et 0.5–5 mm. longis; capitula majuscula 17–25 mm. lata; involucrum turbinato-hemisphericum ca. 3-seriatum, bracteis acutis vel acuminatis 4.5–13 mm. longis 1–1.5 mm. latis, triangulari-lanceolatis vel oblongo-lanceolatis, dense pilis sordidis basi nigrescentibus albidis 3–5 mm. longis villosis, dorso ad margines apicemque papillosis; flores numerosi bene exserti laete lutei, corollis 13 mm. longis, tubo 4.5–5 mm. longo superne sparse pilosulo, lamina oblonga 8–9 mm. longa 2.5–2.7 mm. lata 5-dentata, dentibus triangulari-oblengis obtusis; achaenia columnaria intense rubro-brunnea 2 mm. longa apice truncata, basi paullo angustata, ca. 10-costata, ad angulos minute tuberculata; pappi setae pallide fulvae vel sordido-albidae 5–6 mm. longae barbellatae.—Guatemala: Dept. Quezaltenango: Dry rocky edge of barranco, uppermost ridge to summit of Volcán de Zunil, alt. 3,000–3,800 meters, January 22, 1940, Julian A. Steyermark 34860 (type in Herb. Field Mus.). Dept. San Marcos: Rocky cliffs at top of trail between San Sebastián and Todos Santos, upper slopes of Volcán de Tajumulco, alt. 3,000–3,800 meters, Steyermark 36939.

A very distinct species, belonging to section *Aurelliformia*. It is related to *H. Skutchii* Blake, from which it differs in its acaulescent or subacaulescent, naked or almost naked stems which are shorter and more densely lanulose in the upper part and at the very base, the cauline leaves only one or none, narrower basal leaves more pointed at the apex and with more callous projections on the margins, and in its more densely hairy involucre.

Hieracium jalapense Standl. & Steyermark, sp. nov.—*Perennis herbacea prope basin ramosa 50 cm. alta; caulis purpurascens praesertim basin versus foliatus, prope basin pilis deflexis 3–4 mm. longis villosus, superne pilis brevibus curvis plus minusve adpressis et aliis brevibus glanduliferis pubescens, ramis floriferis dense glanduloso-tomentulosis; folia radicalia vulgo ad anthesin persistentia elliptico-lanceolata vel oblongo-oblanceolata, subobtusa et mucronata, basin versus paullo angustata, 6–8 cm. longa 1.5–2 cm. lata, dentibus utroque latere ca. 7 remotis inconspicuis; folia caulina 5–6 lanceolata subacuta calloso-apicata, basi sessili subamplexicaulia, 5.5–7.5 cm. longa 10–12 mm. lata, utrinque modice denseve villosula atque sparse pilis albis villoso-setosa; inflorescentia corymbiformis 2–2.5 cm. longa 2–3 cm. lata, ramis ultimis 8–9 cm. longis, capitulis 5–9 modicis ca. 30-floris, pedunculis dense pilis glanduliferis 0.5 mm. longis tomentosis; involucrum 2–3-seriatum 8–9 mm. altum 5–8 mm. in statu fructifero latum, bracteis ca. 19–21, exterioribus linearis-triangularibus brevibus, interioribus linearis-lanceolatis fusco-viridis subacutis, praesertim ad costam pilis atro-sordidis adscendentibus 0.8 mm. longis setulosis; corollae luteae 7.5–8.5 mm. longae, lamina 4.5–5 mm. longa, tubo 3–3.5 mm. longo; achaenia nigro-brunnea vel nigra sursum non attenuata, 3.5–3.8 mm. longa 10-costata, antrorse minute tuberculato-hispida; pappus sordidus 4.5–5 mm. longus barbellatus.*—Guatemala: Dept. Jalapa: Grassy places along trail in pine-oak forest near summit, between Miramundo and summit of Montaña Miramundo, between Jalapa and Mataquescuintla, 6 miles north of Miramundo, alt. 2,000–2,500 meters, December 5, 1939, Julian A. Steyermark 32767 (type in Herb. Field Mus.).

This has somewhat the habit of *H. Selerianum* Zahn but lacks the dense floccose tomentum on the lower leaf surfaces. It appears to be a member of section *Intybiformia*, since the achenes are not attenuate upward. The few-headed corymbs, leaves sparsely or moderately villous, and stems with branches arising near the base are distinctive characters of this species.

Hieracium minarum Standl. & Steyermark, sp. nov.—Perennis herbacea 45–96 cm. alta, caule solitario; rhizoma breve; folia radicalia vulgo ad anthesin deficiencia, in plantis juvenilibus elliptico-oblunga vel obovato-oblunga, apice obtusa vel rotundata, subitus pilosa; caulis infra medium foliatus, foliis interdum tantum 1–2, infra inflorescentiam simplex, inferne sparse vel modice pilosus, superne adpresso-pilosulus atque sparse stipitato-glandulosus; folia inferiora et media 6–7 vel 1–2, oblanceolata vel oblongo-lanceolata, inferioribus in basin subpetioliformem angustatis, superioribus mediisque sessilibus et basi subrotundatis, infimis apice rotundatis vel obtusis, aliis acutis vel acuminatis, 3–10.5 cm. longis 1–2.7 cm. latis, utroque latere dentibus 2–8 angustis callosis onustis, supra sparse vel modice pilis 1.5–5.5 mm. longis pilosis, subitus pilis brevibus curvis modice adpresso-pilosulis; capitula numerosa 45–50 vel interdum tantum 12, inflorescentia laxa elongato-racemoso-corymbosa 15–30 cm. longa 4–9 cm. lata, floribus ca. 23–26; pedunculi graciles divaricato- vel arcuato-adscendentibus 1–5 cm. longi modice denseve stipitato-glandulosi et adpresso-pilosuli, pedicellis glanduloso-puberulis 5–20 mm. longis; involucrum ca. 2-seriatum 7–10 mm. altum 5–10 mm. in statu fructifero latum, bracteis 18–21, exterioribus brevibus triangularibus, interioribus linear-lanceolatis, cuspidiatis vel caudatis modice stipitato-glandulosis praesertim ad basin et ad partem inferiorem costae, aliter glabris, marginibus subscariosis; corollae luteae 8–10 mm. longae, lamina 4–5.5 mm. longa 1–1.2 mm. lata 5-denticulata, lobis linearibus obtusis glabris, tubo ca. 4 mm. longo dorso praesertim inferne pilosulo; achaenia immatura fusca vel castaneo-brunnea 3 mm. longa utrinque plus minusve attenuata, 8-costata, minute antrorse tuberculato-hispida; pappus fulvus 3–6 mm. longus barbellatus.—Guatemala: Dept. Zacapa: Pine-covered slopes, Sierra de las Minas, along trail between Río Hondo and summit at Finca Alejandría, alt. 1,000–1,500 meters, October 11, 1939, Julian A. Steyermark 29722 (type in Herb. Field Mus.); also no. 29688. Dept. Chiquimula: South-facing open grassy upper pine-clad slopes, Cerro Tixixí, 3–5 miles north of Jocotán, alt. 500–1,500 meters, Steyermark 31653.

By its combination of short pubescence, elongate subcylindric paniculate inflorescence, and short-pubescent leaves, this appears distinct from other species of Mexico and Central America. It seems to belong to section *Pulmonareiformia*, and is the first species of this group to be found outside Atlantic North America. In general appearance it suggests *H. Gronovii* L. of the United States.

Hieracium ostreophyllum Standl. & Steyermark, sp. nov.—
 Herba perennis herbacea 45–50 cm. alta; caudex brevis apice dense longipilosus; folia basalia ad anthesin persistentia 4–6 oblongo-ovata vel oblongo-spathulata, subitus purpurascens, 4–8 cm. longa 2–3.5 cm. lata, utrinque pilis albis 3–5.5 mm. longis longisetosa, apice obtusa vel rotundata, ad basin subsessilem angustata, utrinque 4–5-callosodentata; folium caulinum vulgo 1, 4–7 cm. supra basin caulis insertum, elliptico-oblanceolatum vel lanceolatum, ca. 2.5 cm. longum et 5 mm. latum, acutum, ad basim attenuatum, utrinque longipilosum; caules pilis albis 3–5 mm. longis longisetosi, superne sparse breviter pilosi et glanduloso-pilosi vel glabri, ad inflorescentiam densius glanduloso-pilosi; inflorescentia laxe racemoso-corymbiformis 6–8 cm. alta 4–5 cm. lata, pedunculis 1–2.5 cm. longis, dense glanduloso-pilosis; capitula 4–6 modica 33–35-flora; involucrum ca. 3-seriatum 9–12 mm. altum 5.5–10 mm. (in statu fructifero) latum, bracteis 22–23, extimus linearis-triangularibus brevibus, ceteris linearis-lanceolatis abrupte acutis et triangulari-appendiculatis, dense glanduloso-pubescentibus, pilis usque 1.5 mm. longis, marginibus subscariosis; corollae luteae 10–11 mm. longae; achaenia brunnecenti-nigra 3–3.5 mm. longa costata, ad angulos minute tuberculata-hispida; pappi setae albae vel albescentes 5.5–6.5 mm. longae dense serrulato-barbellatae.—Guatemala: Dept. San Marcos: Dry pine slopes, barranco 6 miles southwest of Tajumulco, northwestern slopes of Volcán de Tajumulco, alt. 2,300–2,800 meters, February, 1940, Julian A. Steyermark 36690 (type in Herb. Field Mus.). Dept. Huehuetenango: Pine-oak forest, mountains southwest of Malacatancito, alt. 1,800–2,400 meters, January, 1939, Standley 62633.

This appears to belong to the section *Crepidisperma* and is the first of the section to be reported from Central America. It is nearest *H. Fendleri* Schultz Bip. of southwestern United States and northern Mexico, but differs in the densely long-glandular pubescence of the involucral bracts, which lack the floccose hairs of that species; also in the much less hairy stems and relatively smaller and shorter heads.

Hieracium tacanense Standl. & Steyermark, sp. nov.—Perennis herbacea, caule solitario 40 cm. alto plerumque prope basin foliato, superne minute sordide flocculoso-tomentuloso, inferne densius tomentuloso, superne praesertim ad inflorescentiam dense pilis setiformibus 2 mm. longis tomentoso; folia radicalia ad anthesin deficientia; folia caulinis ca. 4 firme membranacea anguste linearis-oblanceolata in basin petioliformem angustata, subito acuta et

calloso-apiculata, 12–15 cm. longa 7–9 mm. lata, dentibus utroque latere 6–7 brevibus, supra modice breviterque pilosula, subitus densius sordide floccoso-tomentosa; inflorescentia densa breviter corymbosa 2–4 cm. longa et aequilata; capitula 4–7 modica ca. 65-flora, ramis inflorescentiae erecto-adscendentibus, pedunculis 4–10 mm. longis dense sordide floccoso-tomentulosis et patentis-setosis; involucrum ca. 3-seriatum 7–9 mm. altum, 5–10 mm. in statu fructifero latum, bracteis ca. 30, exterioribus brevibus linearitriangularibus, interioribus linearilanceolatis intense viridibus acutis vel subacutis, pilis densis adscendentibus longis setiformibus sordide nigro-pilosis, nigro-vittatis, marginibus subscariosis; corollae luteae 7–7.5 mm. longae, lamina 4–5 mm. longa 1 mm. lata 5-denticulata glabra, tubo 4 mm. longo glabro; achaenia immatura 2.8–3 mm. longa fusco-brunnea ca. 8-costata ad costas dense antrorso-hispida; pappus sordidus 4.5–5 mm. longus barbellatus.—Guatemala: Dept. San Marcos: Between Sibinal and summit of Volcán de Tacaná, alt. 2,500–4,400 meters, February 19, 1940, Julian A. Steyermark 36128 (type in Herb. Field Mus.).

Referable to section *Verbasciformia*, and related to *H. Selerianum* Zahn. It differs from that species in having much narrower leaves, in the long spreading setiform hairs on the branches of the inflorescence, more densely hairy involucral bracts, and larger achenes.

Mikania guatemalensis Standl. & Steyermark, sp. nov.—Scandens, caulis teretibus glabris; folia petiolata ovata firme membranacea vel subcoriacea, supra intense viridia lucida, subtus pallidiora, lamina 4.5–10 cm. longa 2.5–5 cm. lata supra basin pinnatim 5-nervia, acuminata et submucronata, basi truncata vel subcuneata, glabra, marginibus integris, petiolis glabris 2–4 cm. longis; inflorescentia racemoso-paniculata pyramidalis; capitula 4-flora numerosa non congesta 6–7 mm. alta, ramis inflorescentiae glabris, pedicellis glabris vel sparse pilosulis 2–3 mm. longis; bracteae involucri linearilanceolatae vel oblanceolatae subacutae sparse ciliolatae 3–3.5 mm. longae; corollae albidae 3.5–4 mm. longae glabrae sparse glanduliferae, lobis 0.6 mm. longis, fave 1.5 mm. longo in tubum angustum 2 mm. longum contracto; pappi setae 28–36 albae serrulatae; achaenia pallide brunnea 2.6–2.8 mm. longa sparse vel modice puberula, glandulis brunneis conspersa.—Guatemala: Dept. Izabal: Puerto Barrios, at sea level, February 25, 1905, C. C. Deam 40 (type in Herb. Field Mus.); same locality, in *Manicaria* swamp, Standley 72836. Seashore at Punta Palma, Steyermark 39824, 39840. Near Cristina, Steyermark 38388.—British Honduras: In jungle, Schipp 28.

Related to *M. Houstoniana* (L.) Robinson, with which it has been confused. It differs from that species in its glandular-puberulent rather than glabrous achenes, glabrous or almost glabrous leaves, and less dense inflorescence. In appearance it simulates also *M. leiostachya* Benth., but differs in its pedicellate heads and the glabrous lower leaf surfaces.

Pectis flava Standl. & Steyermark, sp. nov.—Annua, caulinibus inferne simplicibus superne ramosis, ramis divergenti-adscendentibus, 8-12 cm. alta glabra; folia linearis-oblonga vel linearis-elliptica 7-11 mm. longa 1.6-2.1 mm. lata basi connata, prope basin 2-ciliata, cuspidata, glabra, subtus pallide viridia glanduloso-punctata; capitula solitaria in axillis vel ramulis terminantia, pedunculis glabris 8-16 mm. longis; involucrum 4.5-5 mm. altum 2-2.5 mm. latum, bracteis 5 linearibus vel oblongo-linearibus obtusis vel acutiusculis scarioso-marginatis, 1-seriatim glanduloso-punctatis glabris; radii 6, ligulis 1.7 mm. longis 0.7 mm. latis; disci flores 5, corollis 2.1 mm. longis, lobis ovatis obtusis, fauce 1 mm. longo, tubo vix angustiore 1 mm. longo; achaenia immatura nigrescentia linearia 3.5 mm. longa minute transverse rectangulari-reticulata, antrorse hirtella; pappi squamellae lanceolatae vel lineares inaequales serrato-setulosae 0.5-1.2 mm. longae.—Guatemala: Dept. Jutiapa: Plains and swampy ground along railroad between Agua Blanca and Amatillo, alt. 950-990 meters, October 24, 1939, Julian A. Steyermark 30415 (type in Herb. Field Mus.).

Related, apparently, to *P. Swartziana* Less., from which it differs in having 5 instead of 7 involucral bracts, slightly shorter involucres, and peduncles only 1.5-2 rather than 2.5-3 cm. long.

Polymnia Standleyi Steyermark, sp. nov.—Herbacea vel subfrutescens 2.5-5 m. alta erecta, caule viridi inferne usque 5 cm. diam. glabratu vel superne pilis parvis curvis adpressis sparse puberulo; folia opposita tenuiter membranacea, media et inferiora flabelliforme-ovata 25-35 cm. longa 13-16 cm. lata, acuta, basi contracta et in petiolum late alatum 8-15 cm. longum 2.5-4 cm. latum decurrentia, petiolo basi auriculato arcte setulosodentato, lamina triplinervia; folia caulinis superiora breviora triangulari-hastata vel rhombo-elliptica, petiolo 0.5-4 cm. longo 5-15 mm. lato, basi auriculato, supra molliter pilosa, subtus glanduloso-villosula; pedunculi glanduloso-puberuli et glanduloso-pilos; capitula radiata paniculato-corymbosa; involucri bracteae 5 patentes ovatae membranaceae 1.5-2.5 cm. longae 1-2 cm. latae acutae, basi latae et subcordatae, palmatim

5-6-nerviae, extus glanduloso-puberulae; receptaculum planum 9 mm. latum; radii 9-11 lutei apice trilobi, lamina 15 mm. longa 5 mm. lata, feminei; disci flores lutei hermaphroditi ca. 50-75, corolla 7-8 mm. longa; paleae exteriores complicatae flores arcte involventes curvae 7 mm. longae, glandulis sessilibus et stipitatis dense conspersae, apice sparse pilosulae, interiores oblongo-spathulatae 6 mm. longae acutiusculae; achaenia epapposa compresso-tetragona subacute angulata cuneato-obovoidea 2.5 mm. longa 1.5 mm. lata, apice abrupte angustata, fusco-brunnea, reticulari-lineolata.—Guatemala: Dept. San Marcos: Between La Vega Ridge along Río Vega and northeast slopes of Volcán de Tacaná, vicinity of San Rafael, Volcán de Tacaná, alt. 2,500-3,000 meters, February 20, 1940, Julian A. Steyermark 36181 (type in Herb. Field Mus.); also no. 36265. Near town of Tajumulco, alt. 2,300-2,800 meters, Steyermark 36860.

In general appearance like *P. maculata* Cav., but differing in its much larger involucral bracts, much smaller achenes, larger heads, unlobed serrate flabelliform-obovate leaves with a different type of pubescence, conspicuously stipitate-glandular peduncles, and its often much greater size. An unusual feature of the species is the fact that many of the heads have fertile disk florets that produce fertile achenes. One of the distinguishing characters of *Polymnia* is supposed to be the possession of sterile disk florets.

Schaetzellia Standleyi Steyermark, sp. nov.—Ut videtur perennis 50 cm. alta vel ultra suffrutescens, caulis brunneis teretibus dense praesertim superne tomentulosis; folia opposita patentia membranacea utrinque intense viridia petiolata triangulari-ovata, basi palmatim 3-nervia, grosse crenata, prope apicem anguste angustatum obtusum integra, basi subito truncata vel subtruncata, lamina 1.5-4 cm. longa 1-3.5 cm. lata, utrinque dense griseo-velutina, subitus dense puncticulata, petiolis 6-10 mm. longis minute denseque velutinis; inflorescentiae ramos terminantes dense breviterque corymbiformes, pedunculis 2-2.5 mm. longis dense minute velutinis; capitula homogama 15-30, ca. 16-25-flora, receptaculo conico nudo; involucrum turbinato-cylindraceum 3.5-4 mm. altum 2-2.5 mm. latum 2-seriatum, bracteis exterioribus apice paullo purpurascensibus, bracteis ca. 10, exterioribus subinaequalibus interioribus brevioribus vel eas subaequantibus, spathulato-oblanceolatis abrupte mucronatis, conspicue 3-nerviis vel obscure 5-nerviis, dorso glanduloso-pilosulis, glandulis breviter stipitatis vel subsessilibus; corollae albae 2.8 mm. longae, lobis late ovatis subobtusis dorso puberulis 0.6-0.7 mm. longis, fauce infundibuliformi 0.7-1.2 mm. longo sparse glandu-

loso, abrupte in tubum 1–1.2 mm. longum angustato; appendices antherarum latae triangulares obtusae, basi integra obtusae vel rotundatae; styli rami longi graciles linearis-oblungi obtusi dorso dense papilloi; pappi setae 2 graciles setiformes 2.3–2.5 mm. longae serrulatae vel barbellatae; achaenia nigra compressa linearis-oblunga ecostata superne ad margines modice hispidula, ad facies sparse hispidula, ca. 2 mm. longa.—Guatemala: Dept. Jutiapa: Dry slopes of rocky escarpment bordering Lago de Retana, between Ovejero and Progreso, alt. 600 meters, November 26, 1939, Julian A. Steyermark 32041 (type in Herb. Field Mus.). Dept. Chiquimula: Dry rocky glade slopes, Montaña Castilla, 3 miles southeast of Quezaltepeque, alt. 1,200–1,500 meters, Steyermark 31344.

Heretofore there has been known a single species of this genus, *S. mexicana* Schultz Bip. The Guatemalan plant differs from the Mexican one in its pubescent rather than glabrous involucral bracts, which are shorter, firmer, and of a different shape, in having the leaves truncate or subtruncate instead of cuneate at the base, in the closely 6–10-crenate rather than 3–7-crenate leaf margins, in the evenly tomentulose rather than villous or villosulous lower surfaces of the leaves, and in the subligneous perennial habit.

***Stevia chortiana* Standl. & Steyermark, sp. nov.**—*Herba perennis, caulis suberectis simplicibus usque ad medium foliosis, internodiis inferioribus 1–1.5 cm. longis, superioribus 2–4 cm. longis; folia opposita ovata acuta vel subobtusa crenato-dentata, dentibus utroque latere 9–10, abrupte contracta et inferne petioliformia, utrinque villosa et glandulosa, 2.2–4 cm. longa 1.2–2 cm. lata; inflorescentia corymbosa sublaxa, ramulis adpresso-pilosis; capitula 6–7 mm. alta breviter pedicellata; involucrum ca. 3.2 mm. altum, bracteis oblongis obtusis glandulosis et villosulis; corollae roseae 4–4.2 mm. longae; achaenia immatura heteromorpha 2.5 mm. longa ad costas hispidula, setae adelphocarpiorum 4 setuloso-serratae acuminatae, basi coronae squamis cuneatis paulo erosus circumdatae, idiocarpio squamis erosu-dentatis coronato.*—Guatemala: Dept. Chiquimula: Dry wooded pine-clad slopes, between Finca San José (southeast of Concepción de las Minas) and Montaña Nube (Montaña Volcancitos), alt. 1,200–1,700 meters, October, 1939, Julian A. Steyermark 30866 (type in Herb. Field Mus.).

The specific name is derived from that of the Chorti Indians who inhabit the region of Guatemala in which the plant grows. The species is related to *S. hirsuta* DC., which has larger heads and involu-

cres and a more compact inflorescence, with less conspicuously pedunculate heads. The involucral bracts are more densely covered with sessile glands than in *S. hirsuta*.

Verbesina guatemalensis Rob. & Greenm. var. **glabrata** Standl. & Steyermark, var. nov.—*Folia subtus glabrata vel sparse puberula.*—Guatemala: Dept. Zacapa: Lower slopes of Sierra de las Minas, along trail above Río Hondo, alt. 250–900 meters, October, 1939, Julian A. Steyermark 29505 (type in Herb. Field Mus.); a shrub 3–4 meters high; flowers white. Also, from the same region, Steyermark 29491 and 29370.

Verbesina apuleura Blake, var. **foliolata** Standl. & Steyermark, var. nov. *Folia suprema ramulorum floriferorum elliptico-obovata 5–7.5 cm. longa 1.5–2.8 cm. lata, supra medium remote denticulata, dentibus angustis utroque latere 2–7, supra scabridula, subtus densius hirtello-scabridula, apice acuta vel acuminata, basi cuneata; capitula laxe aggregata 10–11 mm. alta, 10–13 mm. lata, 3–6 mm. longe pedunculata; bracteae extimae insigniter foliosae subaequales obovatae ad elliptico-oblanceolatae, subacutae, 7–10 mm. longae 3–5 mm. latae; bracteae interiores lanceolatae ad oblongo-lanceolatae 5–7 mm. longae 1.5–2 mm. latae.* Guatemala: Dept. Quezaltenango: In thicket, slopes of Volcán de Santa María, above Palojunoy, alt. 2,700 meters, March, 1939, Paul C. Standley 67540 (type in Herb. Field Mus.).

A shrub or small tree 2.5–5 meters high; common. From typical *V. apuleura* this variety differs in the foliose subequal outer bracts and in the much smaller upper rameal leaves.

STUDIES OF CENTRAL AMERICAN PLANTS—V

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The following pages are occupied almost wholly with descriptions of Guatemalan plants of a limited number of families, obtained by recent botanical expeditions of Field Museum of Natural History. There are discussed also a few plants from other parts of tropical North America.

AMARANTHACEAE

Amaranthus spinosus L. Sp. Pl. 991. 1753. *Xanthium parvifolium* DC. Prodr. 5: 524. 1936.—The identification of De Candolle's name has been published by S. F. Blake, Contr. U. S. Nat. Herb. 26: 228. 1930, in a discussion of types of Compositae. It is repeated here only in order to associate it with the family to which the plant really belongs.

MENISPERMACEAE

Disciphania nesiotes Standl., sp. nov.—Scandens volubilis fere glabra, caulis gracilibus herbaceis striatis glabris, internodiis elongatis; folia omnia similia longipetiolata membranacea, petiolo 4–7 cm. longo basi incrassata geniculato glabro; lamina in utraque facie pilis paucis inconspicuis adpressis induita vel fere omnino glabra, basi profunde angusteque cordata, supra viridis, subtus multo pallidior, profunde interdum fere ad basin lobata, 7–13 cm. lata, lobis 1–3 cm. latis prope basin plus minusve angustatis, acutis vel acuminatis, interdum rotundatis et breviter apiculato-acuminatis, integris vel rare bilobis; spicae masculae longipedunculatae, pedunculo inclusu 4–6 cm. longae, sat dense multiflorae vel interruptae glabrae, bracteis linearifiliformibus 1.5–2 mm. longis viridibus patentibus vel adscendentibus, sepalis exterioribus late ovatis obtusis carnosulis 2.5 mm. longis prope apicem puberulis; spicae femineae pedunculatae in statu fructifero ca. 4 cm. longae, rhachi crassa; endocarpium late ellipticum paullo compressum, 8 mm. longum fere 6 mm. latum, basi et apice obtusum, una facie 1-costatum, facie altera 3-costatum, costis paullo elevatis undulatis et rugosis.—Mexico: María Madre Island, off the coast of the state of Nayarit, July 24, 1932, *John Thomas Howell* 10438 (type in Herb. Calif. Acad. Sci.; fragment in Herb. Field Mus.); vernacular name “Uva.”

In *Trees and Shrubs of Mexico* the genus *Disciphania* does not appear among the few Menispermaceae recorded from Mexico, but one species, *D. calocarpa* Standl., more plentiful in Central America, has since been found in Veracruz. It is altogether unlike the present plant in foliage, the leaves being entire and peltate. *D. nesiotes* bears some resemblance to the illustration of *D. Glaziovii* Taubert (see *Pflanzenreich* IV. 94: f. 63. 1910), a Brazilian species with dimorphous leaves.

LAURACEAE

***Ocotea laetevirens* Standl. & Steyermark, sp. nov.**—Arbor 9-metralis, ramulis gracillimis fere omnino glabris vel in statu juvenili sparse minutissime puberulis, teretibus; folia crasse membranacea breviter petiolata, petiolo gracili 7–10 mm. longo; lamina oblongo-elliptica vel lanceolato-oblonga 12–18 cm. longa 4–6.5 cm. lata subito sensimve acuminata, acumine angusto obtuso, basi acuta, glabra, supra opaca, venis vix prominulis, subtus lutescenti-viridis vel olivacea, penninervia, nervis lateralibus utroque latere ca. 8 arcuatis angulo semirecto adscendentibus, venis prominulis laxe reticulatis; inflorescentia laxe paniculata foliis saepe longior, parte ramosa ca. 6 cm. longa, pedunculo ut videtur recurvo 4–9 cm. longo gracillimo, floribus numerosis, pedicellis saepe subumbellatis 2–3 mm. longis glabris vel minutissime strigillosis; flores in alabastro globosi vix 2 mm. longi minute sparseque puberuli; perianthii tubus brevissimus, segmentis subaequalibus late ellipticis obtusissimis suberectis; filamenta staminum extimorum lata crassaque anthera paullo longiora glabra, antheris late ovatis apice obtusissimis; glandulae basales staminum interiorum magnae globosae sessiles; staminodia stipitiformia vel interdum fere nulla; fructus cupula hemisphaerica 1 cm. lata, margine simplici.—Guatemala: Dept. Huehuetenango: Cerro Chiblac, between Finca San Rafael and Ixcán, Sierra de los Cuchumatanes, alt. 1,200–2,000 meters, July, 1942, Julian A. Steyermark 49189 (type in Herb. Field Mus.). Between Ixcán and Finca San Rafael, 200–800 meters, Steyermark 49378.

***Ocotea chiapensis* (Lundell) Standl. & Steyermark, comb. nov.**
Nectandra chiapensis Lundell, Contr. Univ. Mich. Herb. 6: 12. 1941.

***Ocotea verapazensis* Standl. & Steyermark, sp. nov.**—Arbor 6–12-metralis, ramulis gracilibus obtuse angulatis fere omnino glabris; folia chartacea in sicco fusca vel fuscescentia breve petiolata, petiolo gracili ca. 1 cm. longo anguste fere ad basin angulato; lamina

ob lanceolato-oblonga vulgo 14–27 cm. longa atque 4.5–8 cm. lata, sensim subitove breviter acuminata, acumine obtuso, basin acutam vel subobtusam versus sensim attenuata, glabra, penninervia, venis utrinque arcte prominulo-reticulatis, nervis lateralibus utroque latere ca. 8 angulo latiusculo valde adscendentibus in axillis non barbatis; paniculae laxae multiflorae pedunculo longo gracili inclusa 15 cm. longae vel breviores foliis breviores, ramis glabris, pedicellis gracilibus usque 3.5 mm. longis; flores parvi virides 2.5 mm. longi glabri; perianthii tubus brevissimus, segmentis late ellipticis obtusis; antherae fere sessiles ovato-quadratae apice obtusissimae vel subtruncatae, filamentis crassis glabris; staminodia abortiva; ovarium globosum glabrum, stylo brevissimo; bacca ellipsoidea 2.5 cm. longa 1.5 cm. lata lucida; cupula rubra turbinato-campanulata 12–15 mm. lata, pedicello crassissimo.—Guatemala: Dept. Alta Verapaz: Tactic, alt. 1,480 meters, April, 1939, *Paul C. Standley* 71421 (type in Herb. Field Mus.). Mountains east of Tactic, on the road to Tamahú, 1,500–1,650 meters, *Standley* 71421, 71163. Dept. Izabal: Along Río Tameja, 50 meters, *Steyermark* 41789.

Persea sessilis Standl. & Steyermark, sp. nov.—Frutex 1.5 m. altus, ramis teretibus ca. 7 mm. crassis densissime foliatis fusco-ferrugineis glabris vel glabratibus; folia subrigide coriacea lucida fere sessilia, petiolo ca. 4 mm. longo atque 5 mm. lato; lamina anguste lanceolato-oblonga ca. 20 cm. longa et 5.5–7 cm. lata acuta vel acuminata, apice ipso subobtuso, basin versus parum attenuata, basi ipsa lata breviter cordata, glaberrima, costa supra breviter sulcata, subtus crassa maxime elevata, nervis lateralibus utroque latere ca. 15 angulo latiusculo adscendentibus, nervis prominulis laxe reticulatis; paniculae foliis multo breviores cymose pauciflorae minute sed vix dense pilosulo-tomentulosae, floribus breviter pedicellatis, ramis adscendentibus; perianthii segmenta subaequalia vel exteriora paullo breviora latissime ovata vel subrotunda apice obtusissima vel rotundata, utrinque sericea, in statu fructifero persistentia et patentia; ovarium glabrum; fructus immaturus globosus 1 cm. diam.—Guatemala: Dept. Zacapa: Upper slopes, Sierra de las Minas, along Río Repollal to summit of mountain, alt. 2,100–2,400 meters, January 12–13, 1942, *Julian A. Steyermark* 42487 (type in Herb. Field Mus.).

Known from only imperfect fruiting material, but there is no doubt as to the proper reference of this plant to *Persea*, in which genus it is one of the most distinct species. It is the only species of continental North America having sessile leaves.

Persea vesticula Standl. & Steyerm., sp. nov.—Arbor 15–30-metralis, ramulis crassissimis rugosis fusco-ferrugineis vel cinnamomeis dense atque minutissime adpresso puberulo-tomentulosis, sat dense foliatis; folia rigide coriacea crasse 1–2 cm. longe petiolata oblonga vel elliptico-oblonga 10–17 cm. longa 3.5–6.5 cm. lata obtusa vel subacuta, basi obtusa vel rotundata et interdum plus minusve inaequalia, supra lucida glabra, subtus brunnescens ubique densissime tomento minuto arcte adpresso ochraceo vel brunnescens obtecta, penninervia, costa subtus elevata, nervis laterali bus utroque latere ca. 9 prominentibus tenuibus angulo latiusculo adscendentibus, venis vix prominulis laxe sed inconspicue reticulatis; inflorescentiae numerosae in axillis superioribus foliorum nascentes vel ad apicem ramulorum dense multi-aggregatae pedunculo longo inclusa ca. 14 cm. longae, ubique densissime tomentulosae, pedicellis crassissimis vix ultra 2 mm. longis; perianthium 5–6 mm. longum utrinque dense tomentulosum, segmentis late ovatis vel ellipticis obtusis, exterioribus bene brevioribus; filamenta pilosula, antheris subaequilonga; antherae 4-loccellatae late oblongae apice obtusae; staminodia majuscula cordato-sagittata apice pilis paucis longis onusta, longe stipitata, stipite pilosulo; ovarium glabrum globosum; bacca globosa apice rotundata ca. 3.5 cm. longa (immatura?).—Guatemala: Dept. San Marcos: Top of escarpment along river, Volcán de Tacaná, between La Vega ridge and northeast slopes of the volcano, near the Mexican boundary, alt. 2,500–3,000 meters, February 20, 1940, Julian A. Steyermark 36207 (type in Herb. Field Mus.). Dept. El Progreso: Sierra de las Minas, hills north of Finca Piamonte, 2,400–3,300 meters, Steyermark 43558 (sterile). Dept. Huehuetenango: Cerro Huitz, Sierra de los Cuchumatanes, 1,500–2,600 meters, Steyermark 48571.

Closely related to *P. longipes* (Schlecht.) Meissn., but in that the leaves are glabrous beneath; in *P. vesticula* they are densely covered by a very minute and closely appressed tomentum, so fine that to the naked eye they appear glabrous or nearly so. The local name is Canoc, a term applied generally in western Guatemala to many trees of the Lauraceae.

Phoebe macrophylla Standl. & Steyerm., sp. nov.—Arbor humilis praeter inflorescentiam omnino glabra, ramulis gracilibus teretibus vel obtuse angulatis, vetustioribus griseo-brunneis; folia inter maxima breviter petiolata chartacea, petiolo crasso nudo 1.5–2 cm. longo; lamina ovalis vel obovato-elliptica 19–29 cm. longa 9–12 cm. lata apice rotundata vel obtusissima, rarius acuta, basi rotundata

vel obtusissima, penninervia, nervis lateralibus utroque latere ca. 13 subarcuatis adscendentibus, venis utrinque prominulis laxe reticulatis, interdum lucida, in sicco saepe subtus brunnescens; paniculae axillares longipedunculatae laxe multiflorae, interdum folia aequantes, ramis inferioribus glabris, superioribus sparse puberulis vel pilosulis, pedicellis 1.5–3 mm. longis; flores viridescentes 2.5–3 mm. longi sparse strigilosi; perianthii tubus bene evolutus late turbinatus, segmentis suborbicularibus apice rotundatis intus prope basin pilosulis; filamenta antheras fere aequantia crassa sparse pilosula vel fere glabra, antheris oblongo-quadratis apice obtusis; staminodia parva breviter stipitata oblonga vel ovata obtusa; ovarium glabrum ovoidium, stylo crasso subaequilongo; bacca ovalis vel ellipsoidea 2 cm. longa 1.5 cm. lata apice rotundata, cupula turbinato-campanulata 1 cm. lata, margine simplici.—Guatemala: Dept. Alta Verapaz: Wet forest, southeast of Tactic, alt. 1,500 meters, March, 1939, *Paul C. Standley* 70009 (type in Herb. Field Mus.). Mountains along road between Tactic and the divide on the road to Tamahú, 1,500–1,600 meters, April, 1941, *Standley* 91326.

What is probably the same species is found also in the departments of Quezaltenango and San Marcos.

Phoebe Gentlei (Lundell) Standl. & Steyerl., comb. nov.—*Persea Gentlei* Lundell, Contr. Univ. Mich. Herb. 6: 18. 1941.

Phoebe padiformis Standl. & Steyerl., sp. nov.—Arbor 15-metralis, trunco 30 cm. diam., ramulis primo subsparse adpresso-pilosis cito glabratis, gracilibus striato-angulatis; folia breviter petiolata chartacea, petiolo crassiusculo 6–10 mm. longo; lamina oblongo-elliptica vel oblanceolato-oblonga 8–11 cm. longa 3–5.5 cm. lata subito acuta vel breviter acuminata, acumine ipso obtuso, basi acuta, in statu juvenili griseo-sericea, cito glabrata et in statu adulto fere omnino glabra, subtus in nervorum axillis dense albido-barbata, penninervia, nervis lateralibus utroque latere ca. 6 arcuatis valde adscendentibus, venis in pagina superiore non elevatis, subtus vix prominulis pallidis laxe reticulatis; paniculae axillares racemiformes vel racemosae foliis duplo vel ultra breviores, ramis brevissimis, laxe pauci- vel multiflori glabri, pedicellis gracilibus glabris rectis 3–4 mm. longis; flores viridescenti-albi glabri 3 mm. longi, perianthii tubo fere nullo, segmentis late ellipticis obtusis suberectis; filamenta gracilia antheris duplo longiora et ultra glabra vel prope basin sparse pilosula, antheris parvis oblongis obtusis; glandulae filamentorum seriei tertiae magnae crassae cordatae fere sessiles; staminodia con-

spicua compressa ovata acuta breviter stipitata; ovarium globosum glabrum, stylo crassiusculo fere aequilongo.—Guatemala: Dept. Quezaltenango: Colombia, alt. 575 meters, October, 1934, A. F. Skutch 1367 (type in Herb. Field Mus.), 1358. Dept. Huehuetenango: Cerro Chiblac, between Finca San Rafael and Ixcán, 1,200–2,000 meters, July, 1942, Steyermark 49183.

***Phoebe savannarum* Standl. & Steyermark, sp. nov.**—Arbor 9-metralis, ramulis gracillimis teretibus sordide denseque pilosulis cito glabratibus et fusco-brunneis; folia parva breviter petiolata chartacea, petiolo nudo vel superne anguste marginato 3–5 mm. longo; lamina elliptica, ovato-elliptica vel oblongo-elliptica 6–8.5 cm. longa 2–3.5 cm. lata, subito longeque caudato-acuminata, acumine obtuso, basi obtusa, in sicco fusco-brunnea, supra lucida glabra, venis non elevatis, subtus tantum ad nervos sparse minute pilosula, aliter glabra, triplinervia, venis subtus sat dense prominulo-reticulatis; paniculae axillares 3–4 cm. longae pauciflorae graciliter longipedunculatae cymiformes minute pilosulae vel puberulae, pedicellis puberulis vix ultra 2 mm. longis; flores albi dense minuteque puberuli vel strigilosi 2.5 mm. longi; perianthii tubus brevis, segmentis late ellipticis obtusis subpatentibus intus dense tomentulosis; antherae extimae magnae suborbicularares apice rotundatae, filamentis brevisimis; glandulae seriei tertiae globosae sessiles; staminodia breviter stipitata late ovata obtusa conspicua; ovarium glabrum globoso-ovoideum, stylo brevi crasso.—Guatemala: Dept. Alta Verapaz: Along stream bordering forest, savanna between base of Cerro Chinajá at Sachaj and Sacacao, alt. 150–180 meters, April, 1942, Julian A. Steyermark 45712 (type in Herb. Field Mus.).

OXALIDACEAE

***Oxalis calcicola* Standl. & Steyermark, sp. nov.**—Acaulis, tota planta vix ultra 5 cm. alta; bulbus 1.5–2 cm. longus 1 cm. diam. ovoideus fusco-brunneus, squamis trinerviis valde dissolutis; folia basalia numerosa palmatim 3-foliolata, petiolis filiformibus 1–2 cm. longis glabris; foliola obreniformi-cordata vulgo 4–5 mm. lata apice breviter excisa, basi latissime cuneata, lobis late rotundatis, utrinque glabra; pedunculi basales foliis breviores 1–2-flori minutissime puberuli vel glabri, pedicellis usque 4 mm. longis; sepala oblongo-lanceolata 3.5 mm. longa acuta pallide viridia, apice rubro-bicallosa; petala roseo-purpurea 7 mm. longa late cuneato-ovata; filamenta nuda vel minutissime appendiculata, longioribus sparse minute

pilosulis.—Guatemala: Dept. Huehuetenango: Rocky limestone outcrop about trees of *Juniperus Standleyi*, alt. 3,700 meters, vicinity of Chémal, Sierra de los Cuchumatanes, August 8, 1942, Julian A. Steyermark 50258 (type in Herb. Field Mus.).

This probably has no better claims to specific recognition than most of the other ill-conceived species that have been christened in this genus, but we have been unable to unite it satisfactorily with any of the numerous forms named from Mexico. It is noteworthy for its greatly reduced size, very numerous small leaves, and the short, only 1-2-flowered peduncles. The relationship is possibly with *O. alpina* Rose, also known from Guatemala, and with a substantial number of other habitually similar and evidently related plants of the Mexican mountains.

EUPHORBIACEAE

***Euphorbia guatemalensis* Standl. & Steyermark, sp. nov.**—*Herba perennis erecta vel saepius procumbens, interdum subscandens, saepe 1 m. longa et ultra, caulis crassiusculis teretibus pallide viridibus sparse denseve pilis laxis patentibus pilosis vel glabratis, non articulatis; stipulae minutae glanduliformes; folia alterna tenuiter membranacea integra subtus pallidiora, longipetiolata, petiolo gracillimo vulgo 1-2.5 cm. longo; lamina late ovata vel rotundo-ovata 2.5-4.5 cm. longa 1.5-4 cm. lata, apice obtusa vel rotundata, basi rotundata et interdum angustissime subpeltata, utrinque laxe pilosa vel glabrata, nervis lateralibus subtus manifestis ca. 6-jugis angulo lato divergentibus; inflorescentia paniculam elongatam laxam pilosam foliosam efformans, ramis interdum flexuosis; involucra numerosissima cymosa longipedicellata turbinato-campanulata 2 mm. longa sat dense pilis patentibus pilosa; glandulae 5, appendice late oblonga extus strigillosa apice subtruncata et laciniato-dentata vel breviter obtuse dentata; capsula longiuscule exserta glabra 2.5 mm. lata, coccis dorso late rotundatis; semina pallida profunde foveolata.*—Guatemala: Dept. Chimaltenango: Damp wooded barranco, along road between Chimaltenango and San Martín Jilotepeque, alt. 1,500-1,700 meters, December 22, 1940, Paul C. Standley 80907 (type in Herb. Field Mus.).

There are at hand 13 other collections of the same species from the departments of Zacapa, Jalapa, Jutiapa, Santa Rosa, Guatemala, and Chimaltenango. In general appearance the plant is much like the endemic *E. ephedromorpha* Bartlett of Guatemala, but that

differs in its conspicuously angulate stems and entire involucral appendages.

Euphorbia pantomalaca Standl. & Steyerm., sp. nov.—*Herba perennis e radice crassa lignosa nascens prostrata, caulis numerosis prostratis dense foliatis dichotomo-ramosis teretibus dense mollierque pilosulis, pilis brevibus patentibus albidis; folia opposita fere sessilia oblique ovalia vel ovali-ovata 5–9 mm. longa apice rotundata vel obtusissima, basi valde obliqua, crassiuscula, apicem versus obtuse denticulata vel interdum subintegra, utrinque densissime minuteque velutino-pilosula; involucra axillaria fere sessilia campanulata dense albido-tomentulosa vix ad 1 mm. longa; glandulae parvae transverse ovales intense rubrae, appendice pallidiore subintegra glandula latiore; capsula (bene evoluta non visa) breviter exserta densissime albo-tomentulosa; styli dense hirti.*—Guatemala: Dept. Baja Verapaz: Sierra de las Minas, opposite El Rancho (Dept. El Progreso), March 10, 1905, *W. A. Kellerman* 5175 (type in Herb. Field Mus.).

Belonging to the subgenus *Chamaesyce* or *Anisophyllum*. This was determined by Millspaugh as *E. velleriflora* Boiss., but it does not resemble very closely type material of that species which was available to him. That differs greatly in its pubescence, which consists of sparse, long, rather stiff hairs; its leaves, too, are mostly acute, at least the terminal ones.

Euphorbia rutilis (Millsp.) Standl. & Steyerm., comb. nov.
Chamaesyce rutilis Millsp. Field Mus. Bot. 2: 385. 1914.

Euphorbia senilis Standl. & Steyerm., sp. nov.—*Herba perennis e radice perpendiculari lignosa nascens, caulis numerosis gracilibus flexuosis prostratis laxe dichotomis dense pilis longis patentibus albis hirsutis; stipulae parvae in segmentos fere setaceos hirsutos divisae; folia opposita fere sessilia late ovata vel latissime ovalia, saepe fere quadrangularia plerumque 5–7 mm. longa et fere aequilata, apice late obtusa vel late rotundata, basi inaequali subcordata, crassa, obsolete undulato-dentata vel saepe integra, utrinque densissime pilis longissimis albis teneribus patentibus hirsuta; involucra parva in axillis supremis nascentia dense albo-hirsuta vix 1 mm. longa; glandulae rubro-purpureae transverse ovales, appendicibus angustis integris rubro-purpureis; capsula fere 2 mm. lata profunde sulcata, glabra vel pilis paucis longis conspersa, coccis dorso obtuse carinatis; semina obtuse tetragona glauca fere laevia, faciebus planis vel leviter concavis.*—Guatemala: Dept. Huehuetenango:

Dry slopes between San Ildefonso Ixtahuacán and Cuilco, alt. 1,350–1,600 meters, August 16, 1942, Julian A. Steyermark 50739 (type in Herb. Field Mus.).

Referable to the subgenus *Chamaesyce* or *Anisophyllum*, and related to *E. villifera* Scheele probably as closely as to any described species. It may, indeed, be only an extreme form of that, but the very dense indument of exceedingly long, white hairs makes this highly improbable.

Euphorbia Steyermarkii Standl., sp. nov.—*Herba perennis erecta ca. 30 cm. alta omnino glabra, caulis pluribus simplicibus vel sparse ramosis, ramis subteretibus ca. 5 mm. crassis viridibus, interdum subangulatis laxe foliatis; folia breviter petiolata in vivo subcarnosa integra supra intense viridia subtus pallidiora, alterna, eis ad basin inflorescentiae ternatis, petiolo lato usque 1 cm. longo, saepe fere nullo; lamina obovata, rhombeo-obovata vel rotundo-elliptica 5–6.5 cm. longa 2.5–4.5 cm. lata, apice obtusissima vel rotundata, basi cuneata, penninervia, nervis lateralibus vulgo obscuris vel obsoletis; stipulae obsoletae; inflorescentia terminalis umbelliformis parva pauciradiata foliis multo brevior, bracteis viridiibus cordato-orbicularibus vel reniformibus sessilibus 8–14 mm. latis apice late rotundatis; involucra pauca ad apices ramulorum inter bracteas nascentia sessilia glabra late campanulata ca. 2 mm. longa, lobis brevibus obovatis fimbriato-dentatis; glandulae 5 exappendiculatae suborbiculares patentes integrae; capsula longiexserta, pedicello crasso suberecto.*—Guatemala: Dept. Zacapa: On rocks in dense woods, near Zacapa, alt. about 200 meters, October, 1940, *Paul C. Standley* 74673 (type in Herb. Field Mus.). Dept. Chiquimula: Along Río Tacó, between Chiquimula and Montaña Barriol, 500–1,200 meters, Steyermark 30671. Dept. Huehuetenango: Northwest of Cuilco, two-thirds the way up Cerro Chiquihui above Carrizal, 1,350–2,300 meters, Steyermark 50777.

Referable to the subgenus *Tithymalus*, but it bears no close resemblance to any species of Mexico or Central America of which I have seen material.

Euphorbia verapazensis Standl. & Steyermark, sp. nov.—*Frutex scandens vel subscandens praeter inflorescentiam omnino glaber, caulis articulatis subteretibus viridescentibus, internodiis elongatis; stipulae nullae; folia opposita vel ternata tenuiter membranacea integra, petiolo filiformi 8–15 mm. longo; lamina orbicularis vel ovali-orbicularis 15–20 mm. longa 10–17 mm. lata, apice late*

rotundata vel late subemarginata, basi rotundata vel latissime cuneata, subitus paullo pallidior, nervis lateralibus subtus manifestis sed non elevatis angulo lato divergentibus; involucra in cymas parvas pedunculatas petiolis vix longiores ad nodos ternatas disposita, breviter pedicellata, ramulis pedicellisque sparse strigillosis; involucrum sparse strigillosum fere 2 mm. longum basi acutum; glandulae transverse ovales, appendice albida glabra glandula latiore obtuse denticulata, apice breviter biloba.—Guatemala: Dept. Alta Verapaz: A liana on a tree, Río Chiacté, alt. 480 meters, May 4, 1939, C. L. Wilson 272 (type in Herb. Field Mus.).

The only related Guatemalan species is *E. Schlechtendalii* Boiss., which differs in having glabrous involucres. Several related species with pubescent involucres are found in Mexico, but none agree well with this collection from Alta Verapaz.

Gymnanthes guatemalensis Standl. & Steyermark, sp. nov.—
Frutex altus vel arbor glabra, ramis gracilibus obtuse subangulatis ochraceis lenticellatis, novellis viridibus magis angulatis, internodiis brevibus; folia magna breviter petiolata tenuiter coriacea, petiolo crasso 7–12 mm. longo supra anguste canaliculato; lamina oblongo-oblanceolata vel anguste oblanceolata 11–20 cm. longa 3.5–7 cm. lata, abrupte breviterque acuta vel acuminata, acumine obtuso, basin acutam versus sensim cuneato-attenuata, adpresso crenato-serrata, crenis glandulosis, margine prope basin glandulis majusculis non elevatis onusto, supra in sicco griseo-viridis, nervis venisque prominulis, subitus paullo pallidior, costa tenui elevata, nervis lateralibus utroque latere ca. 11, angulo lato abeuntibus prope marginem inaequaliter conjunctis, venis prominulis laxe reticulatis; spicae masculae 3.5–5 cm. longae fere ad basin floriferae sat dense multiflorae, rhachi dense puberula, bracteis late ovatis sessilibus obtusis puberulis trifloris, floribus longiuscule pedicellatis, sepalo parvo viridi late ovato; stamina in flore intermedio 3–5, in lateralibus 3; inflorescentiae femineae non visae.—Guatemala: Dept. Quezaltenango: Along quebrada, between Finca Pirineos and Finca Soledad, lower southern slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–1,400 meters, January 5, 1940, Julian A. Steyermark 33501 (type in Herb. Field Mus.). Dept. San Marcos: Potrero Tojó, Volcán de Tajumulco, 1,300–1,500 meters, March, 1940, Steyermark 37703.

This has much larger leaves than any other species known from Central America or Mexico. In general appearance it somewhat suggests *G. longipes* Muell. Arg. of Mexico.

***Mabea excelsa* Standl. & Steyermark**, sp. nov.—*Arbor excelsa* 30-metralis, trunco 65 cm. diam., omnino glabra, ramis gracillimis teretibus, novellis viridibus, internodiis brevibus vel elongatis; folia chartacea graciliter petiolata, petiolo 6–12 mm. longo; lamina anguste oblonga vel lanceolato-oblonga 8–13 cm. longa 2–4 cm. lata anguste longiacuminata vel abrupte acuminata, basi acuta vel rotundata, supra in sicco griseo-viridis sublucida, subtus glaucescens, costa tenui elevata, nervis lateralibus utroque latere ca. 17 angulo lato abeuntibus fere rectis juxta marginem inaequaliter conjunctis, nervum collectivum vix efformantibus, venis inconspicuis paucis laxe reticulatis; pedicelli fructiferi ca. 18 mm. longi crassi; columella 1 cm. longa basi et apice incrassata; capsula ca. 1.5 cm. longa densissime minute tomentulosa, valvis crassis lignosis apice acutissimis; semina crassa vix compressa olivacea lucida laevia ca. 9 mm. longa et 7 mm. lata, carunculo 1.5 mm. longo.—Guatemala: Dept. Quezaltenango: In coffee plantation with original forest trees as shade, Colombia, alt. 850 meters, December 27, 1934, A. F. Skutch 2008 (type in Herb. Field Mus.).

There are referred here also several sterile collections, apparently conspecific, from the departments of Santa Rosa and Retalhuleu. The type tree attained a size that is unusual in this genus; the sterile specimens were taken from much smaller ones. This species, confined to the Pacific slope of Guatemala, is clearly different from *M. occidentalis* Benth., which is common in some parts of the Atlantic watershed. The latter has uniformly smaller seeds, and the nervation of the leaves is distinct, the lateral nerves being joined remote from the margin to form an irregular but distinct collective nerve. Only fruiting material of *M. excelsa* is available, and it is likely that the complete inflorescences will afford other and better characters for separating the two Guatemalan species.

***Ophellantha Steyermarkii* Standl., sp. nov.—*Arbuscula* 6-metralis, ramis gracilibus teretibus ochraceis vel brunnescens, novellis pilis laxis patentibus pilosulis, internodiis elongatis sed foliis brevioribus; stipulae induratae spinescentes 2–2.5 mm. longae; folia graciliter petiolata membranacea in sicco laete viridia, petiolo 10–18 mm. longo dense pilosulo; lamina lanceolata vel lanceolato-oblonga 5–6.5 cm. longa 1.5–2.5 cm. lata, apicem subacutum versus sensim angustata, basi cuneato-acuta vel obtusa, subintegra, utrinque pilis patentibus tenerrimis pallidis sat dense pilosa, subtus paullo pallidior, nervis lateralibus utroque latere ca. 5; flores masculi non visi; pedicelli fructiferi graciles ca. 2.5 cm. longi dense pilis adscen-**

dentibus albidis pilosi; sepala feminea foliacea ovata vel oblongo-elliptica ca. 17 mm. longa atque 7 mm. lata, apicem obtusum versus angustata, 5-nervia, utrinque dense pilosula, integra; styli 3, basi brevissime connati, parte libera crassissima dense adpresso-pilosula ad medium bifida, ramis crassissimis; capsula 3-locularis subglobosa densissime velutino-pilosula, pilis patentibus, ca. 12 mm. alta; semina 3 ovalia crassissima 8 mm. longa 6 mm. lata laevia lucida fusco-brunnea.—Guatemala: Dept. Huehuetenango: Trail between Santa Ana Huista and Nentón, over Río Azul and La Laguna, alt. 800–900 meters, August 27, 1942, Julian A. Steyermark 51398 (type in Herb. Field Mus.).

The only other species of the genus, *O. spinosa* Standl., was described from Izalco, Salvador, and is known also from Oaxaca and western Costa Rica. In it the leaves, stems, and flowers are glabrous or nearly so, the fruit (always?) 2-celled and appressed-setulose, and the united portion of the styles much longer. Since *O. spinosa* has been collected on both sides of Guatemala, it should be found in that country, but so far has not been collected there.

Pedilanthus camporum Standl. & Steyer., sp. nov.—Frutex erectus ramosus metralis, ramis suberectis teretibus intense viridibus, novellis sparse tomentellis cito glabratris; folia decidua, non visa; cymae breves densiflorae ad apices caulium vel ramorum aggregatae; bracteae parvae cucullatae dense ochraceo-tomentosae, pedunculis usque 6 mm. longis sparse tomentulosis vel glabratris; involucrum 8–10 mm. longum prope medium 3 mm. latum dense tomentulosum vel puberulum, intus glabrum, superne ad basin fissum, inferne breviter fissum, apicibus rotundatis vel obtusissimis; appendix brevissima vix ultra 4 mm. longa basi cucullato-dilatata, labio brevi liguliformi subretuso; pedicelli masculi glabri, feminei puberuli vel tomentulosi, omnes exserti; ovarium dense albido-tomentulosum, stylo gracili 6–7 mm. longo; capsula globoso-trigona 6 mm. longa et aequilata sparse puberula; semina laevia sordido-brunnea 3–3.5 mm. longa.—Guatemala: Dept. Retalhuleu: Dry thickets, plains between Nueva Linda and Champerico, alt. 120 meters or less, February 18, 1941, Paul C. Standley 87781 (type in Herb. Field Mus.); also No. 87775.

There already have been described too many species in this troublesome genus, and some of them doubtless will have to be reduced, as possibly the present one. Among Central American species it may be recognized readily by its pubescent involucres,

and it does not agree in floral details with any of the species listed by Millspaugh in his account of the group.

Phyllanthus minarum Standl. & Steyerm., sp. nov.—*Frutex* erectus 1.5–2.5 m. altus, ramis vetustioribus teretibus ochraceis stipulis persistentibus asperatis ca. 12 mm. crassis cicatricibus magnis foliorum delapsorum onustis, novellis cum foliis folium pinnatum fingentibus elongatis multifoliatis 2–3 mm. tantum crassis albido-villosulis; stipulae plus minusve persistentes ferrugineae in statu adulto incrassatae et persistentes interdum reflexae ovato-triangulares usque 8 mm. longae acuminatae basi subcordatae; folia inferiora suborbicularia vel rotundo-deltoidea 1.5–3 cm. longa, principalia oblongo-ovata vel deltoideo-oblonga 4.5–7 cm. longa et 3 cm. lata, apice obtusa vel acutiuscula et insigniter cucullata, basi late rotundata vel infima interdum subcordata, membranacea, supra viridia ad nervos sparse puberula, subtus pallida dense pilis hyalinis pilosa; flores dioeci (?), pedicellis floris masculi capillaribus plerumque solitariis sat dense pilosis flexuosis 2–2.5 cm. longis; sepala 6 maxime inaequalia glabra, interiora 5.5 mm. longa oblongo-ovalia obtusissima, exteriora ca. 3.5 mm. longa elliptica vel oblongo-ovata subacuta; glandulae liberae columnam staminalem subaequantes late ovatae; stamina 3, filamentis in tubum brevem coalitis, antheris brevibus cohaerentibus.—Guatemala: Dept. El Progreso: Hills between Finca Piamonte and the slopes southeast of the finca, Sierra de las Minas, alt. 2,400–2,500 meters, February 4, 1942, Julian A. Steyermark 43385 (type in Herb. Field Mus.).

The plant has some resemblance, especially in habit, to *P. Purpusii* Brandeg., but is well marked by its abundant pubescence. The cucullate apices of the leaves are striking, but it is questionable whether this is a natural character or an abnormality.

Stillingia cruenta Standl. & Steyerm., sp. nov.—*Frutex* vel arbor 2–8-metralis glabra, dense ramosa, ramis gracilibus teretibus griseo-brunneis sat dense lenticellatis; petioli graciles 7–14 mm. longi; lamina elliptico-ovata vel oblongo-ovata 4–8 cm. longa 2–3.5 cm. lata longiacuminata basi rotundata coriacea lucida, margine arcte adpresso-serrulato basi utroque latere glandulis 2 majusculis onusto, subtus pallidior, nervis lateralibus utroque latere ca. 6 tenerrimis prominulis arcuatis; inflorescentiae perfectae non visae terminales crassae, bracteis patulis induratis; capsula globosa laevis vix sulcata ca. 7 mm. alta et aequilata vel paullo latior.—Guatemala:

Dept. Baja Verapaz: Dry rocky hills above Santa Rosa, in pine-oak forest, alt. about 1,500 meters, April 4, 1941, *Paul C. Standley* 91207 (type in Herb. Field Mus.).

Several other collections have been made by the same collector at the same locality in 1939 and 1941. The tree is abundant here, but among the numerous individuals examined only one capsule was found, besides a few dry old inflorescences from which flowers and fruits had fallen. Among Guatemalan species of the genus this is distinguished by its short broad leaves and large size, the others being normally only low shrubs. The leaves during the dry season are often handsomely colored with bright red.

***Tetrorchidium brevifolium* Standl. & Steyermark, sp. nov.**—*Arbor parva omnino glabra, ramulis gracilibus subteretibus ochraceis, juvenilibus vix ultra 2 mm. crassis; folia parva graciliter 4–10 mm. longe petiolata membranacea oblongo-ovata vel obovato-elliptica, 9–12 cm. longa 4–5.5 cm. lata, abrupte breviter acuminata, acumine obtuso vel subacuto, basi cuneato-attenuata, integra vel subundulata, fere concoloria, nervis lateralibus utroque latere ca. 6 teneris arcuatis prope marginem laxe conjunctis; spicae masculae gracillimae flexuosae breviter pedunculatae 3.5–7 cm. longae laxae interruptae, floribus arcte sessilibus solitariis vel pauci-aggregatis 3 mm. latis; sepala latissime ovata, apice rotundata vel obtusissima, ciliolata; stamina 3, antheris subsessilibus.*—Guatemala: Dept. Alta Verapaz: In virgin forest, Rubelpec, February 11, 1939, *C. L. Wilson* 188 (type in Herb. Field Mus.).

The only other species of northern Central America, *T. rotundatum* Standl., is altogether different, with much larger, long-petiolate leaves rounded or very obtuse at the apex, thick juvenile branches, and a pubescent rachis in the inflorescence.

TILIACEAE

***Carpodiptera Mariarum* Standl., sp. nov.**—*Arbor 9-metralis, ramis crassis rimosis lenticellatis brunnescentibus, novellis minute stellato-puberulis dense foliatis; folia graciliter petiolata chartacea, petiolo 1–4.5 cm. longo puberulo vel fere glabro; lamina oblongo-ovata vel lanceolato-ovata 7–14 cm. longa 4–7 cm. lata apicem anguste obtusum versus sensim angusta, basi anguste rotundata et breviter angusteque cordata, supra glabra sublucida, venulis prominentibus arcte reticulatis, subtus paullo pallidior ubique fere microscopice brunneo-lepidota, basi 5-nervia, nervis subtus prope basin*

patenti-pilosis; inflorescentia magna paniculata dense ramosa multiflora, ramis suberectis densissime pilis stellatis brunnescentibus sordide tomentulosis, floribus dense aggregatis pedicellis crassiusculis usque 5 mm. longis stipatis, bracteis parvis oblongis obtusis dense stellato-tomentulosis; alabastra globoso-ovoidea densissime stellato-tomentosa obtusa; calyx 3.5 mm. longus basi rotundatus, lobis inaequalibus rotundo-ovatis obtusissimis tubo subaequalibus; petala pallide purpurea ca. 7 mm. longa cuneato-ovata late unguiculata utrinque glabra.—Mexico: María Madre Island, off the coast of the state of Nayarit, July 26, 1932, *John Thomas Howell* 10503 (type in Herb. Field Mus.; duplicate in Herb. Calif. Acad. Sci.); vernacular name “Balleta.”

In Mexico this genus has been known previously from a single species, *C. Ameliae* Lundell, described from San Luis Potosí, and now known also from Tabasco and British Honduras. The other species are West Indian, and the occurrence of the genus on the western coast of Mexico could scarcely have been expected, in spite of the numerous previous records of West Indian groups from the Pacific coast. *Carpodiptera Ameliae* differs from the plant here described in its larger flowers and its acuminate leaves with less evident indument.

MYRTACEAE

***Calyptranthes macrantha* Standl. & Steyermark, sp. nov.**—Frutex, ramis gracilibus subteretibus, novellis densissime pilis longis brunneis pilosis, cito glabratis, serius brunneis; folia petiolata subcordiaceae, petiolo crasso ca. 1 cm. longo dense brunneo-piloso; lamina oblongo-elliptica 11–14 cm. longa 5–6.5 cm. lata acuta, apice ipso obtuso, basi late cuneata vel rotundata, utrinque sat dense punctata, supra glabra, costa profunde impressa, nervis obscuris, subtus pallidior, primo ut videtur brunneo-tomentosa, in statu adulto tantum ad costam brunneo-pilosa, costa insigniter elevata, nervis lateralibus prominentibus gracilibus angulo fere recto divergentibus prope marginem in nervum collectivum conjunctis; inflorescentiae terminales fasciculatae pedunculo crasso erecto inclusa ca. 12 cm. longae et 9 cm. latae, subpauciflorae, ramis crassis divaricatis tomento laxo rufo densissime obtectis, floribus ad apices ramulorum aggregatis sessilibus; alabastra ellipsoidea 5 mm. longa dense laxeque rufo-tomentosa; caetera ignota.—Guatemala: Dept. Alta Verapaz: Wet mixed forest on banks of Río Frio, about 8 km. below Tactic, alt. about 1,400 meters, April 1, 1941, *Paul C. Standley* 90532 (type in Herb. Field Mus.).

Among Central American species, most of which are Guatemalan, this is noteworthy for its very large flowers. The only material collected is in bud only.

***Calyptranthes Aguilarii* Standl. & Steyermark, sp. nov.**—Frutex omnino glaber, ramulis rigidis gracilibus tetragonis, vetustioribus cinnamomeis vel griseo-brunneis, internodiis foliis brevioribus; folia parva breviter petiolata coriacea, petiolo vix ultra 2 mm. longo; lamina ovata, elliptico-oblonga vel ovato-elliptica 2.5–3 cm. longa 1–1.5 cm. lata obtusa vel apicem obtusum versus angustata, basi acuta vel late obtusa, supra viridis dense impresso-punctata, costa basin versus impressa, nervis obsoletis, subtus pallidior, costa crassiuscula elevata, nervis venisque obsoletis; inflorescentiae numerosae axillares et ad apices ramorum fasciculatae foliis longiores, laxe pauciflorae cymoso-corymbosae, ramulis rigidis fere rectis saepe complanatis usque 10 mm. longis, floribus sessilibus vel subsessilibus; alabastra globosa glaberrima, calyce circumscisso 2.5 mm. lato; stamina longiexserta.—Guatemala: Dept. Quiché: Without special locality, in 1942, José Ignacio Aguilar 810 (type in Herb. Field Mus.), 1191.

Here probably belong several collections from Baja Verapaz. The species is related to *C. belizensis* (Standl.) Lundell, which has longer and relatively very much narrower leaves.

***Eugenia cervina* Standl. & Steyermark, sp. nov.**—Arbor 7–11-metralis, ramis gracilibus teretibus cinnamomeis vel ferrugineis, internodiis elongatis rectis, in statu juvenili dense ferrugineo-tomentosis vel sericeo-tomentosis; folia majuscula coriacea breviter petiolata, petiolo crasso ca. 7 mm. longo; lamina oblongo-lanceolata vel anguste lanceolata 10–20 cm. longa 2.5–5 cm. lata, sensim subitove longe anguste acuminata vel attenuato-acuminata, basi acuta, supra viridis glabra plus minusve lucida, costa impressa, nervis manifestis sed vix prominulis, subtus brunnescens densissime adpresso sericea, costa gracili elevata, nervis lateralibus tenerrimis prominulis numerosis angulo semirecto vel paullo latiore adscendentibus; flores axillares ut videtur brevissime racemosi; bacca ut videtur brevissime pedicellata globosa 1.7–2 cm. diam. dense adpresso tomentulosa vel sericea apice calyce persistente coronata; calycis lobi 4 depresso-orbicularis 3–3.5 mm. lati apice rotundati intus tomentulosi subpatentes; semen 1 fusco-brunneum ca. 17 mm. diam.—Guatemala: Dept. Alta Verapaz: Wooded slopes near Río Icvolay, near Hacienda Yaxcabnal, 5 miles northwest of Cubilguitz, alt.

250–300 meters, March 5, 1942, Julian A. Steyermark 44691 (type in Herb. Field Mus.). South of Cubilgüitz, 300–400 meters, March 3, 1942, Steyermark 44522.

Local name "Cacho de venado." The species is related to *E. Koepperi* Standl. of Honduras.

Eugenia chinajensis Standl. & Steyermark, sp. nov.—Frutex 1.5–4.5 m. altus, ramis gracilibus ferrugineis dense pilis longis patentibus hirsutis, internodiis brevibus vel elongatis; folia brevissime petiolata chartacea vel subcoriacea, petiolo crasso vix ad 3 mm. longo hirsuto; lamina oblonga vel anguste oblonga, 5.5–10 cm. longa 2–4 cm. lata obtuse acuta vel acuminata, basi rotundata vel obtusissima, marginibus revolutis, supra viridis sparse hirsuta vel serius glabrata, costa anguste impressa, nervis prominulis vel fere obsoletis, subtus pallidior brunnescens sat dense pilis longis patentibus hirsuta vel maturitate glabrescens, costa prominente, nervis lateralibus remotis prominulis angulo lato divergentibus; flores in axillis aggregati sessiles; calyx ad apicem baccae persistens breviter hirsutus, lobis 4 erectis rotundo-ovatis 1.5 mm. longis; bacca globosa grosse glanduloso-punctata 5 mm. alta sparse hirtella vel fere glabra; semina 1–2 pallide brunnea lucidissima laevia ca. 5 mm. diam.—Guatemala: Dept. Alta Verapaz: Bordering a savanna on the south side of Cerro Chinajá, alt. 150–180 meters, March 20, 1942, Julian A. Steyermark 45142 (type in Herb. Field Mus.). Savanna north of Concepción, near the Petén boundary, 100 meters, Steyermark 45232.

The species is noteworthy for its oblong leaves, sessile clustered fruits, and especially the dense spreading hirsute pubescence.

Eugenia jutiapensis Standl. & Steyermark, sp. nov.—Frutex, ramis teretibus, junioribus pilis longiusculis patentibus dense pilosis gracilibus, internodiis foliis multo brevioribus; folia crasse membranacea brevissime petiolata, petiolo crasso usque 4 mm. longo dense piloso; lamina oblongo-elliptica 8.5–11.5 cm. longa 4–5.5 cm. lata breviter obtuso-acuminata, basi anguste rotundata, supra in sicco griseo-viridis epunctata ad costam prominulam puberula vel breviter pilosula, aliter glabra, nervis venisque prominulis conspicuis, subtus fere concolor ubique breviter patent-pilosa, costa gracili elevata, nervis lateralibus 8–9-jugis tenerimis angulo semirecto vel latiore adscendentibus arcuatis irregularibus prominentibus, venis quoque prominentibus laxe reticulatis, vix punctata; flores ad nodos defoliatos fasciculati, pedicellis gracillimis plerumque 2–2.5 cm. longis

dense pilis brevibus patentibus pilosis, bracteolis late ovatis sub-acutis glabratis ciliatis; hypanthium obovoideum densissime albido-pilosum 3.5 mm. longum; sepala 4 inaequalia pallida ovalia 5 mm. longa subcucullata apice rotundata, intus glabra extus puberula; discus 2.5 mm. latus glaber; stylus gracilis ca. 7 mm. longus glaber.—Guatemala: Dept. Jutiapa: Jutiapa, December 21, 1938, *John R. Johnston* 1480 (type in Herb. Field Mus.).

There is some uncertainty as to just where this plant was collected, but at least it was probably in the Department of Jutiapa, and most probably along the road between Jutiapa and Cuilapa, in the mountains near the boundary between the departments of Jutiapa and Santa Rosa. The species is related to the Costa Rican *E. oreinoma* Berg, which has larger, relatively broader leaves that are merely obtuse, not rounded, at the base, and on much longer petioles.

***Eugenia papalensis* Standl. & Steyermark, sp. nov.**—Arbor 10-metralis, ramis crassis subteretibus rimosis brunneis, novellis sparse hirtellis, internodiis elongatis; folia magna glabra breviter petiolata rigido-coriacea, petiolo crasso ca. 1 cm. longo; lamina oblonga vel elliptico-oblonga 12–15 cm. longa 6–7.5 cm. lata, apice rotundata vel anguste rotundata, basi rotundata vel obtusissima, supra in sicco griseo-viridis, sublucida, costa subimpressa, nervis obscuris, subtus paullo pallidior lutescens, costa crassiuscula elevata, nervis lateralibus obscuris, venis obsoletis, sparse nigro-punctata; fructus (delapsus tantum visus) globosus 2–2.3 cm. longus basi et apice late rotundatus, dense glanduloso-papillosus glaber; calyx ad apicem fructus persistens, lobis rotundatis ca. 3 mm. longis puberulis apice rotundatis subpatentibus; semen 1 globosum fere 2 cm. diam.—Guatemala: Dept. Huehuetenango: Cumbre Papal, between summit and La Libertad, alt. 1,800–3,000 meters, August 19, 1942, *Julian A. Steyermark* 50964 (type in Herb. Field Mus.).

Local name “Guayabillo.” The material is imperfect, consisting of a leafy branch and several detached fruits. It is evidently a *Eugenia*, and clearly different from any other species known from Central America, distinguished by its relatively large, obtuse or rounded, thick-coriaceous leaves and large fruits.

***Eugenia patalensis* Standl. & Steyermark, sp. nov.**—Frutex 3-metralis vel arbuscula, ramis crassis teretibus griseis vel ferrugineis, novellis rufo-puberulis cito glabratis, internodiis brevibus vel elongatis; folia modica breviter petiolata rigido-coriacea, petiolo crasso

7–10 mm. longo glabro; lamina elliptico-oblonga 6.5–9 cm. longa 3–3.5 cm. lata acuta, acumine ipso obtuso, basi acuta, glabra, supra intense viridis vulgo lucida, costa subimpressa, nervis interdum manifestis sed vix prominulis, subtus pallidior, costa tenera elevata, fusco-punctata, nervis manifestis sed vix prominulis, venis obsoletis; flores in axillis aggregati fasciculati vel brevissime racemosi, pedicellis crassis vix 1.5 mm. longis vel nullis puberulis; hypanthium minute puberulum; calyx parvus vix 2.5 mm. latus glanduloso-punctatus puberulus vel glabratus, lobis brevibus apice late rotundatis; stylus gracilis glaber 4–5 mm. longus; fructus subglobosus 6–7 mm. longus (immaturus) vel ultra, calyce persistente patulo coronata.—Guatemala: Dept. Baja Verapaz: On brushy slope, region of Patal, alt. about 1,600 meters, March 30, 1939, *Paul C. Standley* 69568 (type in Herb. Field Mus.); April 4, 1941, *Standley* 91122, 91118. Mountain side north of Santa Rosa, damp forest, about 1,650 meters, March 30, 1939, *Standley* 69899.

***Eugenia rheedioides* Standl. & Steyerm., sp. nov.**—Frutex vel arbor omnino glabra, ramis teretibus fusco-brunneis vel griseo-brunneis rimosis, novellis tetragonis, internodiis brevibus vel elongatis; folia inter minora breviter petiolata subcoriacea, petiolo 3–4 mm. longo; lamina elliptico-lanceolata, oblanceolata vel oblongolanceolata 4–7.5 cm. longa 1.5–2.5 cm. lata abrupte acuminata vel anguste longiacuminata, basi cuneato-acuminata, saepe supra medium latissima, supra intense viridis lucida, costa anguste impressa, nervis venisque manifestis sed non elevatis, subtus paulo pallidior, costa gracili elevata, nervis lateralibus numerosis tenerimis prominulis angulo acuto adscendentibus, venis vulgo obsoletis; inflorescentiae terminales vel ex axillis supremis nascentes cymosae triflorae vel pauciflorae folia vix aequantes pedunculatae, flore terminali sessili, lateralibus longipedunculatis; bracteolae parvae ovatae late patentibus; alabastra glabra 5 mm. longa pyriformia, hypanthio turbinato basi acuto; calycis segmenta rotundo-ovata apice rotundata dense punctata coriacea; petala ca. 5 mm. longa vix punctata.—Guatemala: Dept. Quiché: Without special locality, in 1942, *José Ignacio Aguilar* 1757 (type in Herb. Field Mus.), 1754.

An ally of *E. fragrans* (Swartz) Willd., but conspicuously different in the acuminate or long-acuminate leaves and glabrous inflorescence.

***Eugenia sasoana* Standl. & Steyerm., sp. nov.**—Frutex 4.5 m. altus saltem in statu adulto omnino glaber, ramis gracillimis teretibus griseis vel pallide brunneis, internodiis plerumque elongatis ad

nodos complanatis; folia inter minora chartacea breviter petiolata, petiolo gracili 4–5 mm. longo; lamina lanceolata vel linear-lanceolata 4.5–6.5 cm. longa 8–15 mm. lata, apicem versus longe attenuata, apice ipso obtuso, basi acuta vel subobtusa, supra in sicco cinereo-viridis vel laete viridis dense glandulos-punctata, costa plana, venis obsoletis, subtus pallidior dense punctata, costa gracillima elevata, nervis lateralibus obscuris vix prominulis angulo acuto adscendentibus; flores breviter racemosi, racemis paucifloris, pedicellis fructiferis brevibus crassis; calyx ad apicem baccae persistens glaber 3 mm. longus dense punctatus, segmentis rotundo-ovatis obtusissimis vel apice rotundatis subcucullatis suberectis; bacca ovalis 8–12 mm. longa dense papilloso-punctata glabra basi et apice rotundata.—Guatemala: Chiquimula: Rocky slopes, Montaña Castilla, vicinity of Montaña Cebollas, along Río Lucía Sasó, 3 miles southeast of Quezaltepeque, alt. 1,200–1,500 meters, November 6, 1939, Julian A. Steyermark 31327 (type in Herb. Field Mus.).

Known only from incomplete and rather unsatisfactory material; noteworthy for the small, very narrow leaves and the rather large fruit, conspicuously longer than broad.

Eugenia savannarum Standl. & Steyermark, sp. nov.—Arbor 7-metralis, ramis teretibus fusco-brunnecentibus, novellis dense brunneo-tomentosis, internodiis plerumque brevibus; folia majuscula petiolata coriacea lucida, petiolo crasso 10–14 mm. longo glabratō; lamina elliptica vel saepius oblongo-elliptica 7.5–13 cm. longa 4–6.5 cm. lata subacuta vel obtusa, apice ipso obtuso, basi acuta vel late cuneata, saltem in statu adulto glabra, supra intense viridis, costa anguste profundeque impressa, nervis obsoletis vel vix manifestis, subtus in sicco brunnescens, costa gracili elevata, nervis lateralibus numerosis tenerrimis angulo latiusculo divergentibus rectis juxta marginem in nervum collectivum conjunctis, venis prominulis laxe reticulatis; inflorescentiae axillares breviter racemosae petiolis subaequales pauciflorae dense rufo-tomentosae, pedicellis brevibus crassis vel fere nullis, interdum usque 3 mm. longis, bracteolis sejunctis ovatis acutis dense tomentosis persistentibus; hypanthium dense rufo-tomentosum oboviedo-globosum; calyx patens extus intusque dense tomentosus, segmentis rotundo-ovalibus apice rotundatis subaequalibus 4 mm. longis et fere aequilatis; receptaculum 3 mm. latum tomentosum vel glabratum, stylo ca. 6 mm. longo glabro.—Guatemala: Dept. Alta Verapaz: Savanna between base of Cerro Chinajá at Sachaj and Sacacao, alt. 150–180 meters, April 6, 1942, Julian A. Steyermark 45710 (type in Herb. Field Mus.).

Psidium Solisii Standl., sp. nov.—Ut videtur frutex dense ramosus, ramis teretibus vel in statu juvenili obtuse compresso-quadrangularibus glabris gracilibus brunnescensibus vel serius griseis sat dense foliatis, internodiis brevibus; folia parva brevissime petiolata subcordiacea, petiolo vix ultra 2 mm. longo; lamina elliptico-oblonga vel lanceolato-oblonga 2.5–4.5 cm. longa 1–1.8 cm. lata apicem obtusum versus paullo angustata, basi acuta, glabra, supra sublucida, costa nervisque prominulis vel fere planis, subtus in sicco fusco-brunnescens, densiuscule punctata, costa elevata, nervis lateralibus ca. 7-jugis angulo acuto adscendentibus prominulis vel obsoletis, margine saepe revoluto; pedunculi axillares 1–3-flori 5–15 mm. longi graciles sed rigidi glabri glanduloso-punctati; calyx deciduus, ut videtur inaequaliter ruptus; bacca globosa 10–12 mm. diam. glabra basi rotundata; semina 1–2 globosa vel semiglobosa brunnea 6–7 mm. lata.—Costa Rica: Hatillo, Finca de J. F. Rojas, alt. 1,100 meters, December 26, 1936, F. Solis 509 (type in Herb. Field Mus.). La Palma de San Ramón, January 12, 1928, A. M. Brenes 5989.

Local name "Pizco." The two collections were determined at first as *P. Sartorianum* (Berg) Ndzu., a more northern species to which this plant is closely related. It is conspicuously distinct, however, in its very obtuse, narrow leaves.

MELASTOMACEAE

Diolena calciphila Standl. & Steyermark, sp. nov.—Herba vel suffrutex humilis erectus vel basi decumbens simplex, usque ad 20 cm. altus, caule nodoso paleaceo-strigoso, internodiis brevibus; folia crasse membranacea subaequalia vel jugi saepe valde inaequalia, graciliter petiolata, petiolis inaequalibus ad 2 cm. longis, adpresso paleaceo-strigosis; lamina elliptica, ovato-elliptica vel oblongo-lanceolata 4–7.5 cm. longa 1.5–4.5 cm. lata, acuta vel anguste acuminata, basi rotundata usque acuta 3–5-plinervia, supra viridis glabra, subtus pallidior ad nervos venasque strigosa, subintegra vel serrulata; inflorescentia terminalis cum pedunculo usque ad 7 cm. longa pauciflora, rhachi glabra vel glabrata, pedicellis crassiusculis ad 3 mm. longis sparse furfuraceis vel glabris; hypanthium 2–2.5 mm. longum turbinatum adpresso et vulgo sparse paleaceo-strigosum; calycis lobuli brevissimi depresso membranacei, dentibus exterioribus viridibus subulatis subpatentibus 1.5–2 mm. longis; petala alba 8 mm. longa; antherae oblongae 1.2 mm. longae; connectivi calcaria 2 gracillima erecta antheram aequantia; capsula

7 mm. lata.—Guatemala: Dept. Quiché: Steep bank in dense forest, "Zona reina," alt. 750 meters, December 2, 1934, *A. F. Skutch* 1811 (type in Herb. Field Mus.). Dept. Alta Verapaz: In forest, Cobán, 1,350 meters, May, 1908, *Tuerckheim* II.1716A. Dense wet limestone forest near Chirriacté, on the Petén Highway, about 900 meters, April, 1941, *Standley* 91630, 91894, 91617.

So far as we know, the genus *Diolena* has not been reported previously from North America, the other representatives of the group, 10 or fewer, being native in northwestern South America. It was surprising to find in studying the rather extensive Guatemalan material of "*Triolena*" that five distinct species were represented, in place of the single one that had been known heretofore. Further study showed that three of these distinct forms actually were referable to *Diolena* rather than *Triolena*. These two genera are exactly alike in general appearance, so far as most of their species are concerned, and are separated only upon the basis of the number of appendages of the anther connective, three in *Triolena* and two in *Diolena*. In view of the uniformity in habit and general appearance of the plants, it would seem that this difference is purely an artificial one, and that it would be more sensible to consider all as constituting a single genus of closely related species. So far as the Guatemalan species of the two groups are concerned, the *Triolena*s may be recognized by having the hypanthium covered with very long, spreading hairs, while in *Diolena* the indument consists of sparse, short, closely appressed hairs, or sometimes is almost wholly wanting. Two of the collections cited above under *D. calciphila* have been distributed as *Triolena paleacea* Donn. Smith, to which this plant does bear a close resemblance.

Diolena roseiflora Standl. & Steyermark, sp. nov.—Herba vel suffrutex erectus vel basi decumbens simplex vix ultra 30 cm. altus, caule crasso subtereti densissime paleaceo-strigoso, paleis angustissimis brunnescentibus, internodiis brevibus vel aliquanto elongatis; folia jugi aequalia vel valde inaequalia, membranacea, petiolis subaequalibus vel inaequalibus 1–6.5 cm. longis, dense furfuraceo-strigosis; lamina elliptico-oblonga vel ovato-oblonga 6–20 cm. longa 2.5–8.5 cm. lata acuminata vel longiacuminata, basin versus paulo cuneato-angustata, basi ipsa anguste rotundata vel obtusa, 5-plies nervia, supra sparse setoso-hirsuta, subtus pallidior, ad nervos venasque dense strigosa, integra vel subintegra; racemi terminales cum pedunculo elongato 6–13 cm. longi, rhachi paleaceo-strigosa vel fere omnino glabra, pedicellis crassis usque 3 mm. longis; hypan-

thium cum sepalis 2–2.5 mm. longum campanulatum dense minute furfuraceo-strigilsum; sepala brevissima vel fere nulla, exteriora 0.5–1 mm. longa subulata; petala 6–7 mm. longa glabra roseo-purpurea vel intense rosea; connectivi appendices 2 gracillimi antheram aequantes; antherae oblongae ca. 1.2 mm. longae; capsula 8 mm. lata.—Guatemala: Dept. Izabal: Along Río Tameja, Cerro San Gil, alt. 50 meters, December 24, 1941, Julian A. Steyermark 41819. Between Escoba and Montaña Escoba, across the bay from Puerto Barrios, Steyermark 39317. Wet forest, Escoba, May, 1939, Standley 72900, 72943.

In most respects this is similar to *D. calciphila*, but it differs from that in the hirsute upper surface of the leaves, usually much larger leaf blades, and rose-purple rather than white petals.

Diolena stenophylla Standl. & Steyermark, sp. nov.—Suffrutex erectus rigidus 15–30 cm. altus simplex vel saepe superne pauciramosus, caule superne gracili dense foliato dense pilis brevibus brunnescens furfuraceo-strigoso, subtereti; folia inter minora jugi subaequalia vel valde inaequalia, membranacea, graciliter petiolata, petiolo 1 cm. longo vel vulgo multo breviore furfuraceo-strigilloso; lamina linear-lanceolata usque anguste lanceolata vel anguste oblanceolata plerumque 4–7 cm. longa et 7–15 mm. lata, longe attenuata, apice ipso acuto, basin versus vulgo sensim attenuata usque subobtusa, 3-plinervia et supra basin conspicue et fere aequaliter penninervia, remote serrulata, supra intense viridis sparse setoso-hirsuta, subtus pallidior sparse setoso-hispida ad nervos strigosa; racemi terminales vel ex axillis supremis nascentes pauciflori folia aequantes vel eis breviores, rhachi sparse furfuraceo-strigillosa vel fere glabra, pedicellis crassis usque 3 mm. longis; hypanthium campanulatum 2–2.5 mm. longum dense furfuraceo-strigilsum; sepala interiora brevissima depressa, exteriora triangulari-subulata ca. 1.5 mm. longa suberecta; petala alba vel roseo tincta glabra 7–8 mm. longa; antherae 1.2 mm. longae; connectivi appendices 2 filiformes erecti antheram subaequantes; capsula 7 mm. lata.—Guatemala: Dept. Huehuetenango: Common on rocks in rich wet forest, between Maxbal and the lake to the southeast, alt. about 1,500 meters, July 15–16, 1942, Julian A. Steyermark 48728 (type in Herb. Field Mus.). Alta Verapaz: Between Hacienda Yaxcabnal along Río Icvolay and Río Apia, northwest of Cubilgüitz, 210–250 meters, March, 1942, Steyermark 45007, 44767. Wooded slopes near Río Icvolay, near Hacienda Yaxcabnal, 250–300 meters, March, 1942, Steyermark 44702.

From the other Guatemalan species this is distinguishable at once by the small, very narrow leaves, which are thinly but conspicuously hirsute on the lower surface. The leaves are pale green and rose-colored beneath, the calyx and hypanthium pale rose, and the pedicels rose-lavender.

Conostegia volcanalis Standl. & Steyermark, sp. nov.—Frutex vel arbor 6–9-metralis, ramulis crassis dense stellato-furfuraceis, tomento brunnescens; folia firme membranacea majuscula longipetiolata conspicue saltem supra medium undulato-dentata, petiolo gracili furfuraceo-puberulo vel glabratu 2.5–4 cm. longo; lamina elliptica vel late elliptica 12–24 cm. longa 6–15 cm. lata breviter cuspidato-acuminata, basi acuta vel late cuneata, 5-plinervia, nervis interioribus 1–2.5 cm. supra basin laminae nascentibus, supra glabra, subitus ad nervos venasque densiuscule stellato-tomentosa vel glabra; paniculae breviter longe pedunculatae folia subaequantes divaricato-ramosae multiflorae stellato-puberulae vel glabratae, floribus longiuscule pedicellatis; alabastra subglobosa 7–9 mm. longa et fere aequilata, apice rotundata et obscure apiculata, sparse minutissime furfuracea vel fere omnino glabra; antherae anguste oblongae 3 mm. longae; ovarium apice profunde depresso glabrum ca. 12-loculare.—Guatemala: Dept. Quezaltenango: Damp forest, Chiquihuite, alt. 1,410 meters, March 8, 1939, *Paul C. Standley* 68152 (type in Herb. Field Mus.). Above Mujuliá, damp dense mixed forest on white sand slopes, 1,800 meters, February, 1941, *Standley* 85672. Southeastern slopes of Volcán de Santa María, 1,300–1,400 meters, *Steyermark* 84333. Dept. San Marcos: Southern slopes of Volcán de Tajumulco, 1,400–1,700 meters, *Steyermark* 37295.—Mexico: Chiapas: Mount Ovando, *E. Matuda* 2644; Laguna, Salina Montecristo, *Matuda* 2049.

This plant is related to *C. sphaerica* Triana, but that, according to photographs and authentic material available for comparison, is very different in its small leaves and flowers. Also related is *C. Bernoulliana* Cogn. of Guatemala, which is distinguished by its much narrower, essentially triplinerved leaves.

Monochaetum guatemalense Standl. & Steyermark, sp. nov.—Herba perennis erecta et ad 30 cm. alta vel saepe decumbens vel procumbens et late laxe ramosa, caulis fusco-brunneis sparse strigosis vel fere glabris, ad angulos subalatis; folia laxa tenuia graciliter petiolata, petiolo 3–10 mm. longo strigoso; lamina ovata vel late ovata 1–2.5 cm. longa 6–10 mm. lata, acuta vel obtusa, basi

late rotundata vel obtusa, 5-plinervia, utrinque sparse strigosa, subtus vix pallidior, integra; flores pauci solitarii axillares vel ramosus breves terminantes, pedicellis pilis eglandulosis sparse setoso-strigosis; hypanthium in statu fructifero campanulatum 5–8 mm. longum sparse pilis rigidiusculis basi tuberculatis patentibus glanduloso-hirsutum; sepala persistentia triangulare-oblunga 6 mm. longa purpureo-rubra acuminata pectinato-ciliata glabra; petala roseo-purpurea 9 mm. longa; stylus 9 mm. longus; antherae longiores 4 mm. longae.—Guatemala: Dept. Huehuetenango: Vicinity of Quetzal, alt. 2,300 meters, July 10, 1942, Julian A. Steyermark 48512 (type in Herb. Field Mus.); Cerro Huitz, between Barillas and Mimanhuitz, Sierra de los Cuchumatanes, 1,600–2,600 meters, Steyermark 48541. Dept. San Marcos: Río Vega, near San Rafael and Guatemala-Mexico boundary, Volcán de Tacaná, 2,500–3,000 meters, Steyermark 36230.

All the collections, unfortunately, are in fruit, so that the stamen characters can not be determined, and the systematic position of the species is therefore uncertain, but the plant is clearly unlike any of the five other species of *Monochaetum* known from Guatemala, nor can it be associated with any of the exclusively Mexican ones. In its appressed pubescence it suggests *M. Deppeanum* (Schlecht. & Cham.) Naud., but that is altogether different in its erect habit and many-flowered inflorescences. The closest relative is probably *M. tenellum* Naud., in which the stems are conspicuously hirsute with spreading hairs and the leaves proportionately narrower.

***Rhynchanthera medialis* Standl. & Steyermark, sp. nov.**—Frutex vel suffrutex ramosus, ramulis sat gracilibus subteretibus glabris; folia membranacea graciliter petiolata saepe in axillis foliis parvis reductis ca. 1 cm. longis breviter petiolatis comitata, petiolo gracili 10–18 mm. longo; lamina oblongo-ovata 6–7.5 cm. longa 2.5–3.5 cm. lata acuminata vel longiacuminata, basi anguste rotundata et breviter cordata 5-plinervia subintegra, supra glabra nervis anguste impressis, subtus prope basin albido-barbata, aliter glabra; inflorescentia alaris cymoso-corymbosa in statu fructifero 9 cm. lata multiflora, capsulis usque ad 1 cm. longe pedicellatis glabris; hypanthium in statu fructifero campanulatum glabrum 7–8 mm. longum; sepala in statu fructifero recurva linearia acuta vix ultra 3 mm. longa; semina cuneiformia 1.2 mm. longa.—Guatemala: Dept. San Marcos: Along Quebrada Suchiaté, between Canjulá and La Unión Juárez, near southeast portion of Volcán de Tacaná, alt. 2,000–3,000 meters,

February 22, 1940, Julian A. Steyermark 36386 (type in Herb. Field Mus.).

While it is reprehensible to describe as new a member of this family in which flower characters are unknown, it is desirable to have a name for this plant. It is evidently a *Rhynchanthera* and the only representative of that genus known in Guatemala. At present there are known from Central America two species of the genus, one that has been found in both Mexico and Panama, the other in Costa Rica and Panama. Both of them differ from the Guatemalan plant in having the leaves abundantly hirsute or pilose on both surfaces, and in having abundant pubescence on the branches.

Triolena izabalensis Standl. & Steyermark, sp. nov.—Herba vel suffrutex erectus vel decumbens ca. 30 cm. altus simplex, caule nodoso dense pilis longis patentibus fulvido-hirsuto, internodiis brevibus; folia membranacea inaequaliter petiolata magna, petiolo gracili 0.5–4 cm. longo dense hirsuto; lamina obovato-oblonga vel anguste elliptico-oblonga 9–20 cm. longa 4.5–7 cm. lata, acuta vel breviter acuminata, basin versus paullo angustata, basi ipsa rotundata et emarginata vel breviter cordata, saepe inaequali, serrato-denticulata, 5–7-plinervia, nervis interioribus usque 3 cm. supra basin laminae nascentibus, supra sparse setoso-hirsuta, subtus paullo pallidior sparse denseve pilis fulvescentibus setoso-hirsuta, ad nervos adpresso-setosa; inflorescentiae cum pedunculo brevi vel elongato 3–13 cm. longae secundiflorae multiflorae, rhachi dense patentihirsuta, pedicellis crassis usque 3 mm. longis; hypanthium sat dense pilis longissimis patentibus indutum; petala alba glabra ca. 8 mm. longa; hypanthium in statu fructifero 7 mm. latum; connectivi appendices 3 filiformes valde adscendentibus.—Guatemala: Dept. Izabal: In banana plantation near headwaters of Río Lámpara, February 7, 1939, C. L. Wilson 175 (type in Herb. Field Mus.). Río Dulce, common on shaded lower wooded slopes of bluffs, Río Dulce above Livingston, April, 1940, Steyermark 38441.

The only other Guatemalan species of the genus is *T. paleolata* Donn. Smith in which all the pubescence of the lower leaf surface consists of closely appressed hairs.

ERICACEAE

Arctostaphylos pyrifolia (Donn. Smith) Standl. & Steyermark, comb. nov. *A. arguta* var. *pyrifolia* Donn. Smith ex Loes. Bull. Herb. Boiss. II. 3: 319. 1903. *Comarostaphylis pyrifolia* Small, N. Amer. Fl. 29: 91. 1914.

Pernettia saxicola Standl. & Steyerm., sp. nov.—*Fruticulus repens* ramosus, ramis gracillimis vix 1 mm. crassis minute puberulis ferrugineis laxe foliatis; folia parva brevissime petiolata subcoriacea oblongo-lanceolata, ovato-oblonga vel inferiora ovata, plerumque 6–9 mm. longa et usque ad 3 mm. lata, obtusa vel subacuta, basi obtusa vel rotundata, crenata, glabra, supra lucida, costa plana vel subimpressa, subtus paulo pallidiora, costa prominente, nervis obsoletis; flores axillares solitarii breviter crasseque pedicellati, pedicellis minutissime puberulis vel glabris bracteis longioribus, bractea glabra eciliata; sepala lanceolato-oblonga ca. 2.2 mm. longa acuminate glabra eciliata; corolla alba ovoideo-urceolata 3 mm. longa glabra.—Guatemala: Dept. San Marcos: Creeping among crevices of rocks on summit of dome, Volcán de Tacaná, alt. about 4,400 meters, February 19, 1940, Julian A. Steyermark 36110 (type in Herb. Field Mus.).

In his account of the Mexican species of *Pernettia*, Camp (Bull. Torrey Club 66: 22. 1939) recognized six species in place of the one recognized by Sleumer in his treatment of the genus. The six are very closely related and it is suspected that Sleumer was nearly right in his treatment of them. The present plant is probably a better species than any of the five extra ones discussed or described by the former author. While it is related, according to Camp's key, to *P. buxifolia* Mart. & Gal., it is very different from all Mexican and Guatemalan species in its repert habit, almost filiform stems, and very small leaves.

Vaccinium haematinum Standl. & Steyerm., sp. nov.—*Frutex* 4.5 m. altus, ramis subteretibus fusco-brunneis, novellis puberulis vel glabratibus, internodiis brevibus; folia alterna rigide coriacea breviter petiolata lucida in sicco plus minusve brunnescens, petiolo crasso 4–5 mm. longo puberulo vel glabratu; lamina elliptica vel oblongo-elliptica 4–6.5 cm. longa 1.5–4 cm. lata obtusa, basi acuta vel late cuneata, obsolete remoteque adpresso-crenata vel fere integra, glabra, costa supra plana vel late breviterque impressa, nervis venisque obsoletis, subtus paulo pallidior epunctata, costa crassiuscula prominente, nervis lateralibus ca. 7-jugis prominulis angulo acuto adscendentibus fere rectis vel irregularibus, venis prominulis laxe reticulatis; flores in axillis brevissime racemosi, racemis paucifloris vix ultra 1 cm. longis sparse puberulis, rhachi brevissima, pedicellis crassiusculis ca. 4 mm. longis, bracteolis pedicelli paulo infra medium insertis lanceolatis adpressis; hypanthium sparse minuteque puberulum vel fere glabrum; calycis lobi

deltoidei 1 mm. longi acuti; *bacca rubra* 5 mm. longa glabra.—Guatemala: Dept. Huehuetenango: Cerro Huitz, between Miman-huitz and Yulhuitz, Sierra de los Cuchumatanes, alt. 1,500–2,600 meters, July 14, 1942, Julian A. Steyermark 48572 (type in Herb. Field Mus.).

Here probably belongs *Steyermark* 42836 from Sierra de las Minas, Zacapa, at 2,000–2,600 meters. This specimen bears flower buds only, in a very immature stage. Its leaves are lanceolate or lance-oblong, varying to elliptic-oblong, and are mostly 3.5–4.5 cm. long and only 1–1.5 cm. wide. It is possible that two species are represented by these collections, but the variation in foliage is quite within limits that may be expected in this family. Because of the incomplete nature of the available material, we are unable to suggest any close relative of this plant, and it does not suggest any other species of Mexico or Central America. The texture and general appearance of the leaves are reminiscent of those of *V. cordatum* Hemsl., but that has an elongate racemose inflorescence and, of course, conspicuously cordate leaves.

RUBIACEAE

Borreria Dussii Standl. Field Mus. Bot. 11: 185. 1936.—Recently, in going over some type photographs received from the Paris herbarium, the writer was chagrined to find one illustrating the type of *Borreria scandens* DC. This clearly represents the Guadeloupe plant described recently as *Borreria Dussii*. Investigation of the literature relating to the former name shows, however, that *B. Dussii* is a valid name (unless some other intervening one has been overlooked), and that De Candolle's name can not be applied to the Guadeloupe species.

The type photograph (Neg. 33551) illustrates a specimen collected in Guadeloupe by Bertero. This specimen is cited by De Candolle, and agrees with his description. However, he cites as synonyms "Diodia sarmentosa è Guadalupæ Spreng. syst. 1. p. 405. *Sperm. scandens* Gmel. syst. 235.—Sloan. jam. hist. 1. t. 28. f. 4." It is apparent that De Candolle's name is intended to be a transfer of Gmelin's. The *Index Kewensis* cites no *Spermacoce scandens* Gmel. but does list *Spermacoce scandens* Aubl. Pl. Guian. 1: 61. 1775. Gmelin's name was published in the work cited but on page 234 (not 235), and he makes no mention of Aublet's earlier publication of the same name. However, both Aublet and Gmelin cite the Sloane illustration, upon which one may assume both based their new

species. There is no reason for supposing that Gmelin had any other basis for his new name, but Aublet describes a Guiana plant that he associated with Sloane's illustration.

The Sloane figure is a wretched one, of a sterile plant of no distinctive characters, and might represent almost any small, slender plant with opposite, rounded leaves. Moreover, it pertains to a Jamaica plant, and there is no reason for supposing that *Borreria Dussii* grows in Jamaica. The Sloane plate is not mentioned, apparently, by Fawcett and Rendle in the *Flora of Jamaica*. I have no suggestions to offer as to the identity of *Spermacoce scandens* Aubl., which is not listed, either, in *Flora Brasiliensis*. Whatever it may be, whether based upon Guiana material or upon Sloane's plate, it is clearly not *Borreria Dussii*, and the latter remains a valid name, with *Borreria scandens* DC., non *Spermacoce scandens* Aubl., as a synonym.

COMPOSITAE

Aster bimater Standl. & Steyerl., sp. nov.—*Herba erecta perenniss, e radice crassa lignosa nascens, caulis 1-pluribus gracilibus inferne simplicibus superne laxe racemoso-paniculatis dense pilis albis patentibus pilosis vel hirsutis, sat dense foliatis, inferne brunnescentibus; folia parva patentia linearia vel oblongo-linearia plerumque 1-2.5 cm. longa 1-2.5 mm. lata acuta vel obtusa et mucronata, integerrima, sessilia, basi obtusa non amplexicaulia, utrinque sat dense pilis albis patentibus hirsutula, 1-nervia; inflorescentia laxe paniculata, ramis gracilibus adscendentibus, ramis monocephalis, sparse dense foliatis, foliis reductis patentibus, capitulis breviter vel longiuscule pedunculatis, pedunculis glanduloso-puberulis; involucrum hemisphaericum 6-7 mm. altum et ca. 8 mm. latum; phyllaria gradatim pauciseriata linearia inferne albida superne herbacea subobtusa mucronato-apiculata glanduloso-puberula, apicibus plus minusve patentibus; radii ligulae 7-8 mm. longae 1.5 mm. latae; disci corollae gracillimae 5.5 mm. longae glabrae breviter 5-dentatae; achaenia 1.8 mm. longa sparse antrorso-hispida, pappi setis brunnescentibus 6 mm. longis.—Mexico: Chiapas: Hillsides near Hacienda Monserrate, May, 1927, C. A. Purpus 12091 (type in Herb. Field Mus.); September, 1923, Purpus 9071.—Guatemala: Dept. Huehuetenango: Aguacatán road, 10-15 km. east of Huehuetenango, alt. about 1,900 meters, January, 1941, Standley 81931, 82065.*

Related to *A. moranensis* HBK. (*A. Lima* Lindl.) of Mexico, which differs in the appressed pubescence of stems and leaves,

strongly ciliate phyllaries, and erect or strongly ascending leaves of the flowering branches.

Cacalia pinetorum Standl. & Steyerm., sp. nov.—Herba erecta robusta ca. metralis inferne simplex superne laxe ramosa, caule tereti crasso ima basi dense lanoso, ubique sat dense pilis albis laxis longiusculis plurilocularibus villosa, striato; folia radicalia ca. 25 cm. longe petiolata, lamina ambitu suborbiculari ca. 18 cm. lata fere ad medium 7-loba, supra sparse villosa, subtus pallida sat dense longivillosa vel in statu juvenili tomentosa, membranacea, lobis late oblongis vel oblongo-ovatis obtusis vel subacutis undulatis vel sublobatis, interdum inaequaliter remoteque dentatis; inflorescentia usque ad 50 cm. alta anguste paniculata, bracteis oblongis vel fere linearibus sessilibus basi dilatatis et amplexicaulibus; capitula numerosa cymosa sat dense aggregata, breviter vel longiuscule pedicellata, bracteis basalibus paucis vel nullis brevibus linearibus; involucrum 10–11 mm. altum laxe breviterque villosum viride; phyllaria 5 oblongo-linearia subacuta anguste pallido-marginata; corolla 12 mm. longa glabra, tubo fere filiformi, lobis 4 mm. longis; achaeenia 5 mm. longa glabra, pappi setis albis 8 mm. longis.—Guatemala: Dept. Quezaltenango: Pine forest, uppermost ridge of Volcán de Santo Tomás, alt. 3,000–3,200 meters, January 22, 1940, Julian A. Steyermark 34933 (type in Herb. Field Mus.).

Of the relationship of *C. peltata* HBK., but decidedly different from it in leaf characters, and in the less numerous phyllaries.

Jungia guatemalensis Standl. & Steyerm., sp. nov.—Herbacea vel suffrutescens scandens vel sarmentosa, ramis crassiusculis subteretibus striatis, novellis dense pilis sordidis patentibus pilosis vel villosulis, internodiis elongatis; folia membranacea 2–9 cm. longe petiolata, petiolo dense villosulo-hispidulo; lamina ambitu suborbicularis 5–11 cm. longa, 5–14 cm. lata, basi breviter cordata, breviter 7-loba vel angulato-lobata, supra viridis ubique dense pilis plurilocularibus villosula, subtus paullo pallidior dense molliterque tomentosa, et glanduloso-atomifera, e basi 3-nervia, bene supra basin inaequaliter 2–3-plinervia, lobis late rotundatis vel latissime triangularibus integris vel undulatis; capitula alba in cymulas parvas densas congesta, cymulis ample paniculatis, capitulis sessilibus vel breviter pedicellatis, paniculis interruptis foliatis; phyllaria interiora ca. 8 et 5 mm. longa apice late triangulari-obtusa et subapiculata subrevoluta oblonga, dorso densissime minute puberula, phyllariis extimis paucis 2–3 mm. longis elliptico-oblongis vel lanceolato-ovatis acuminatis;

achaenia linearia glabra, immatura 1.6 mm. longa, pappi setis 5–6 mm. longis albis breviter plumosis.—Guatemala: Dept. Alta Verapaz: Tactic, alt. 1,800 meters, March, 1903, *Tuerckheim* 8410 (type in Herb. Field Mus.). Wet forest near Tactic, 1,400–1,500 meters, March, 1941, *Standley* 90311.

Here probably belongs also a sterile collection from Quezaltenango, collected above Mujuliá, at 1,800 meters, *Standley* 85683. The type was distributed as *J. ferruginea* L. f., a species known from Costa Rica but quite different from the Guatemalan plant. This is related to the Peruvian *J. spectabilis* Don, but is clearly distinct from it, according to authentic material from Peru. The Mexican *J. Pringlei* Greenm. is described as having pubescent achenes and acuminate hirsute phyllaries.

***Perymenium inamoenum* Standl. & Steyermark, sp. nov.**—
Herba vel suffrutex erectus sparse vel laxe ramosus 40–75 cm. altus, caulis gracilibus saepe purpureo-maculatis obtuse tetragonis sat dense pilis albidis asperis hispidulis, serius glabratris, internodiis elongatis; folia inter minora petiolata crassiuscula rugosa, petiolo usque ad 1 cm. longo hispidulo; lamina ovata vel oblongo-ovata 2.5–5.5 cm. longa 1–2.5 cm. lata acuta vel acuminata, basi rotundata vel obtusa, crenato-serrata, supra scabra tactu asperrima, ad nervos hispidula, venis impressis, subtus ubique dense hispidula, triplinervia, venis prominentibus arcte reticulatis; capitula lutea parva longipedicellata laxe cymoso-corymbosa, pedicellis ad 3.5 cm. longis dense hispidulis, disco ca. 6 mm. lato; involucrum late campanulatum 4–4.5 mm. altum; phyllaria ca. 2-seriata subaequalia viridescentia ovato-oblonga vel lanceolato-oblonga dense strigillosa ciliata, acuta vel acutiuscula, apicibus subherbaceis plus minusve recurvis; radii ligula oblonga usque ad 7 mm. longa; achaenia atrobrunnea 2.5 mm. longa minute strigillosa vel glabrata apice subtruncata; pappi setae ca. 12 crassiusculae achaenio duplo breviores.—Guatemala: Dept. Zacapa: Pine-covered slopes, Sierra de las Minas, along trail between Río Hondo and summit of mountain at Finca Alejandría, alt. 1,000–1,500 meters, October, 1939, *Julian A. Steyermark* 29787 (type in Herb. Field Mus.); also No. 29650. Dept. Jalapa: Dry rocky hillside, vicinity of Jalapa, alt. about 1,350 meters, November, 1940, *Standley* 76667.

In most respects this resembles closely *P. rude* Rob. & Greenm. of Mexico, but in that the flower heads are somewhat larger and the pubescence of the branches and pedicels is closely appressed. In

this group of the genus the species have been multiplied beyond reason and it is unfortunate to propose any new ones, but the present plant can not be referred satisfactorily to any known species.

Perymenium jalapanum Standl. & Steyerm., sp. nov.—*Fru-*
tex 3-metralis, *ramis* gracilibus sulcatis obtuse tetragonis pallide
viridibus, *internodiis* elongatis, sat dense strigosis; *folia* breviter
petiolata chartacea, *petiolo* crasso 5–10 mm. longo; *lamina* lanceolata
vel oblongo-lanceolata 8–10 cm. longa 2.5–3.5 cm. lata longe atten-
uato-acuminata, *basi* anguste rotundata *vel* obtusa, remote adpresso-
serrata, triplinervia *vel* sub-5-plinervia, *supra* dense hispidulo-scabra
et strigillosa, *nervis* prominulis, *subtus* paullo pallidior scabra,
utrinque tactu asperrima, *venis* subtus prominentibus *et* arcte
reticulatis; *inflorescentia* cymoso-corymbosa *vel* cymoso-paniculata,
capitulis paucis luteis, *disco* ca. 1 cm. lato *et* 9 mm. alto, *pedicellis*
1–3.5 cm. longis dense strigosis; *involucrum* 7–8 mm. altum late
campanulatum *basi* rotundatum; *phyllaria* 2–3-seriata, extimis
brevibus ovalibus, *interioribus* ovalibus *vel* late ovali-ovatis, omni-
bus apice rotundatis *vel* obtusissimis dense ciliatis, *exterioribus* dorso
strigosis, *intimis* fere glabris; *radii* *lamina* linear-longa ca. 1 cm.
longa; *achaenia* 4 mm. longa nigrescentia fere glabra minute obscure-
que transverso-rugulosa; *pappi* *setae* ca. 1.8 mm. longae *vel* breviores
inaequales rigidae crassiusculae fulvescentes scabrae subpersistentes.
—Guatemala: Dept. Jalapa: Open meadow bordering cloud forest,
between Miramundo and summit of Montaña Miramundo, 6 miles
south of Miramundo, alt. 2,000–2,300 meters, December 5, 1939,
Julian A. Steyermark 32685 (type in Herb. Field Mus.).

In appearance this is much like *P. Berlandieri* DC. of Mexico,
which has less elongate leaves with denser, less closely appressed
pubescence, and a relatively dense and compact inflorescence.

Polymnia verapazensis Standl. & Steyerm., sp. nov.—*Herba*
erecta *ramosa* *vulgo* 1–1.5 m. *alta*, *ramis* sat dense pilis longis
plurilocularibus *villosis*; *folia* magna membranacea longipetiolata,
petiolo usque 9 cm. longo late marginato *basi* non dilatato, *foliis*
superioribus breviter petiolatis interdum subsessilibus; *lamina* late
deltoideo-ovata *vel* *rotundo-ovata* 14–18 cm. longa *et* 10–15 cm.
lata, acuminata, *basi* abrupte contracta *et* ad *petiolum* longe decur-
rens, triplinervia, arcte minuteque denticulata, prope basin interdum
subhastato-lobata, *supra* sparse *villosa*, *subtus* tenuiter adpresso-
tomentosa *vel* interdum glabrata, *foliis* *superioribus* *multo* *minoribus*
ovatis *vel* *ovato-lanceolatis* longiuscule acuminatis, *elobatis*, *basin*

versus sensim contractis; capitula magna paniculam magnam corymbiformem efformantia longe graciliter pedicellata, pedicellis dense longivillosis; phyllaria exteriora viridescentia late ovata vel rhombico-ovata vel pro parte angustiora 13–17 mm. longa, acuminata vel subito longiacuminata venosa, dorso pilis plurilocularibus longivillosa, interiora angusta dense stipitato-glandulosa; radii ligula anguste oblonga vel linearis-oblonga ca. 1.5 cm. longa; achaenia matura non visa.—Guatemala: Dept. Baja Verapaz: Panzal, alt. 1,000 meters, April, 1907, *H. von Tuerckheim* II.1732 (type in Herb. Field Mus.). Alta Verapaz: Pantín, below Tamahú, 600 meters, Standley 7085A. Wet forest near Tactic, 1,400–1,500 meters, Standley 90305.

Apparently a well-marked species, differing from all forms of *P. maculata* Cav., the common species of Guatemala, in its villous phyllaries and unlobed leaves. The type collection was distributed under a name ascribed to Hieronymus that has not been published. We have discarded the specific name used because of doubt concerning its status, and also because it is altogether inappropriate for this plant.

Salmea orthocephala Standl. & Steyermark, sp. nov.—Frutex 1.5–2.5 cm. altus interdum sarmentosus vel subscandens, ramis brunnescentibus vel ochraceis striatis fere omnino glabris; folia chartacea breviter petiolata, petiolo vix ad 5 mm. longo; lamina ovata, lanceolato-ovata vel interdum deltoideo-ovata 8–13 cm. longa 3.5–6 cm. lata longe angusteque acuminata, basi rotundata, saepe subito angustata et breviter decurrent, remote serrato-dentata vel subintegra, triplinervia, utrinque glabra vel subtus praesertim ad nervos pilosa; capitula sordide alba 8 mm. alta turbinato-campanulata sessilia vel usque ad 8 mm. longe pedicellata, dense cymosopaniculata, paniculis plus minusve corymbiformibus ad 10 cm. latis, pedicellis erectis vel suberectis; involucrum 6.5 mm. altum ca. 4-seriatum sensim graduatum; phyllaria ovato-orbicularia (extima) vel obovato-ovalia apice late rotundata, ciliata, marginibus submembranaceis pallidis, dorso glabra vel glabrata pallida; paleae hyalinae angustae apice rotundatae prope apicem puberulae; corolla glabra 3 mm. longa; achaenia nigrescentia compressa 3 mm. longa sparse adpresso-pilosa, pappi setis brevibus.—Guatemala: Dept. Guatemala: In thickets by river, Concuá Bridge over Río Motagua, alt. about 300 meters, December 8, 1938, *Paul C. Standley* 59321 (type in Herb. Field Mus.). Dept. Chiquimula: Base of Cerro Colorado, along Río Jocotán, near Jocotán, 400 meters, Steyermark 31535.

Río Chiquimula, between Santa Bárbara and Petapilla, 350–420 meters, Steyermark 30257.

While this is closely related to *S. scandens* (L.) DC., it is undoubtedly a distinct species. It has larger heads than is usual in that, the pedicels are erect rather than spreading or ascending, thus giving the inflorescence a different appearance, and the heads are larger than is usual in that species, with broader, more rounded phyllaries.

It is believed that the following is another distinct Guatemalan species:

***Salmea pubescens* (Blake) Standl. & Steyermark, sp. nov.**—*S. scandens* var. *pubescens* Blake, Brittonia 2: 351. 1937. The type was collected by Skutch near Huehuetenango. We have examined four other collections from the departments of Jalapa, Huehuetenango, and Baja Verapaz. All are alike, and easily distinguishable from typical *S. scandens* as well as from the several varieties of it that have been described.

***Tagetes sororia* Standl. & Steyermark, sp. nov.**—Herba erecta metralis vel saepe humilior ramosa, ramis gracilibus teretibus sparse breviter pilosis vel villosis; folia opposita vel superiora alterna pinnata, foliolis 9–15 membranaceis lanceolatis, oblanceolatis vel anguste ellipticis 1–3.5 cm. longis acutis vel acuminatis rare obtusis grosse serratis, supra puberulis, subitus dense pilosulis, glandulis numerosis parvis sparsis; capitula pauca vel numerosa, pedunculis 3–9 cm. longis nudis vel bracteis paucis parvis pinnatisectis onustis; involucrum anguste campanulatum 10–12 mm. longum basi obtusum 5–6 mm. latum glabrum; phyllaria 5–7 apice deltoidea obtusa, conspicue glandulis oblongis brevibus 2-seriatis onusta; ligulae oblongae ca. 12 mm. longae luteae; disci corollae luteae 6 mm. longae puberulae, tubo limbo bene breviore; achaenia 5 mm. longa fere glabra; pappi setae 2 subulatae 3 mm. longae, aliis 3 oblongis vix 1 mm. longis.—Guatemala: Dept. Quezaltenango: Mountains north of Olintepeque, dry oak forest, alt. 2,500–2,800 meters, January 29, 1941, Paul C. Standley 85228 (type in Herb. Field Mus.).

There are at hand also numerous other Guatemalan collections, from the departments of Totonicapán, Quezaltenango, Huehuetenango, and San Marcos. By Rydberg (N. Amer. Fl. 34: 153. 1915) the Guatemalan collections then available were referred to *T. zypaquirensis* Humb. & Bonpl., a plant of Colombia and Ecuador. Since the plant is not known from the mountains of Costa Rica, it was at once suspected by the writers that a distinct species might

be represented in Guatemala, and comparison of material from the two areas shows that this is the case. The South American specimens of *T. zyqaquirensis* are conspicuously different from the Guatemalan ones in their short broad leaflets, very obtuse or rounded at the apex, and in the numerous, conspicuous, well-developed bracts scattered along the peduncles.

***Trixis amphimalaca* Standl. & Steyermark, sp. nov.**—Frutex 1-1.5 m. altus ramosus, ramis ochraceis vel brunnescensibus dense sed laxe tomentosis, sat dense foliatis; folia omnia petiolata chartacea, petiolo crasso 3-6 mm. longo dense tomentoso; lamina oblongo-lanceolata vel anguste elliptico-oblonga 4-6.5 cm. longa 1-2 cm. lata acuta vel breviter acuminata, basi acuta vel attenuata, integra vel subintegra, supra primo dense laxe tomentosa serius glandulosopilosula vel glabrata, subtus tomento ochraceo laxo dense induta; capitula ad apices ramorum dense congesta pauca breviter pedicellata; phyllaria exteriora foliosa oblonga vel lanceolato-oblonga interioribus paullo breviora acuta dense tomentosa; phyllaria interiora oblongo-linearia ca. 12 mm. longa densissime pilis adscendentibus mollibus pilosa et quoque glandulosa, acutiuscula; radii ligulae luteae 5 mm. longae; achaenia 7 mm. longa linearia densissime hispidula; pappi setae fulvescentes 12 mm. longae. —Guatemala: Dept. Huehuetenango: Dry rocky hills north of Chiantla, alt. 2,000-2,250 meters, January 6, 1941, Paul C. Standley 82538 (type in Herb. Field Mus.); also No. 82579.

In describing this plant we are perhaps only adding another poorly marked species to a genus that already has too many such "species," but unless several others are reduced to synonymy or varietal rank, it does not seem possible to associate this with any of the species already described. It comes from the type locality of *T. chiantlensis* Blake, and grows with or near it, which increases one's suspicion regarding its distinctness. *T. chiantlensis*, however, differs decidedly in its relatively scant pubescence, and in having the upper as well as most of the leaves sessile or nearly so, and mostly rounded or obtuse at the base. *T. amphimalaca* is much more distinct from *T. radialis* than is *T. chiantlensis*, which is really very closely related to *T. radialis* and perhaps only a form of it.

***Verbesina petzalensis* Standl. & Steyermark, sp. nov.**—Frutex 2-3.5 m. altus, ramis crassis petiolorum basibus decurrentibus anguste alatis densissime glandulosis et sordide pilosulo-tomentulosis striatis; folia alterna sessilia vel alato-petiolata magna mem-

branacea oblongo-ovata vel lanceolato-oblonga, superiora usque ad 40 cm. longa atque 11 cm. lata acuta vel acuminata, basin versus cuneata vel attenuata ad basin petioli decurrentia obsolete denticulata vel subintegra, supra viridia densissime scabra tactu asperima, subtus densissime pilis brevibus sordidis patentibus vel subadpressis pilosa; capitula parva alba paniculam magnam efformantia, pedicellis usque ad 1 cm. longis rigidis, dense villosulo-hispidulis; involucrum campanulatum basi obtusissimum 4-4.5 mm. altum pilosulum; phyllaria ca. 3-seriata pallida linearis-spathulata vel oblongo-ovata apice obtusa vel subrotundata et apiculata; radii lamina alba ovalis vel late oblonga vix ultra 3 mm. longa; achaenia 3 mm. longa nigra glabra sparse minute tuberculata, basi longiuscule stipitata, latiuscule albido-alata; pappi setae 2 erectae ca. 2 mm. longae.—Guatemala: Dept. Huehuetenango: Damp hillside thicket, near crossing of Río San Juan Ixtán, east of San Rafael Pétzal, alt. about 1,730 meters, January 9, 1941, *Paul C. Standley* 82921 (type in Herb. Field Mus.).

In most respects this resembles closely *V. scabriuscula* Blake, a common species of Guatemala, but in that the branches are naked, not winged.

***Vernonia medialis* Standl. & Steyermark, sp. nov.**—Herba vel frutex 1-1.5 m. altus laxe ramosus, ramis interdum recurvis multi-striatis viridibus dense minute puberulis; folia breviter petiolata membranacea utrinque viridia, petiolo crasso ad 4 mm. longo; lamina lanceolato-oblonga vel elliptico-oblonga, interdum oblanceolato-oblonga 7-15 cm. longa 2-6.5 cm. lata longiacuminata basi acuta usque anguste rotundata integra, supra brevissime tuberculato-pilosula vel serius scaberula vel glabrata, subtus concolor dense resinosa praesertim at venas minute hispidula vel pilosula, saepe fere glabra, non vel vix rugosa; cymae paucae vel numerosae simplices vel laxe ramosae secundae elongatae recurvae, saltem prope basin foliaceo-bracteatae, bracteis interdum fere omnia capitula fulcrantibus foliis similibus sed brevioribus; capitula sessilia campanulata 7-8 mm. alta approximata vel distantia; phyllaria numerosa multiseriata tenuiter laxeque arachnoideo-tomentosa, extima brevia subpatentia spinoso-subulata, costa incrassata excurrente, mediis subadpressis linearis-lanceolatis attenuatis et plus minusve spinoso-subulatis, intimis late linearibus pallide marginatis acutis vel acuminatis; flores albi vel roseo-albi ca. 25, corollis fere filiformibus glabris; achaenia pallida 2.5 mm. longa densissime antrorso-hispidula; pappi setae albae 6 mm. longae, squamis exterioribus oblongo-linearibus

brevibus albis.—Guatemala: Dept. Retalhuleu: Damp thicket, Río Coyote, along road 4 km. west of Retalhuleu, alt. about 300 meters, February 17, 1941, *Paul C. Standley* 87473 (type in Herb. Field Mus.). Vicinity of Retalhuleu, 240 meters, *Standley* 88793. Dept. Escuintla: Near Escuintla, 135–300 meters, January, 1939, *Standley* 63899, 63945.

A relative of *V. canescens* HBK., which differs in its relatively broader and shorter leaves, with the under surface of the leaves usually covered with a very dense indument of long antrorse hairs. The present plant is more or less intermediate between *V. canescens* and *V. argyropappa*, resembling the latter in habit and also in the leafy bracts subtending some of the lower heads of the cymes.

Zexmenia pinetorum Standl. & Steyermark, sp. nov.—Herba perennis erecta e radice brevi crassa nascens, caulis paucis vulgo 50–100 cm. altis ramosis gracilibus dense sparseve pilis patentibus albis hispidis; folia breviter petiolata ovata vel rhombico-ovata 3.5–7 cm. longa 1.5–3.5 cm. lata, acuta vel acuminata, basi late cuneata vel saepe subito contracta et longe interdum fere ad basin petioli decurrentia, triplinervia, adpresso-serrata vel subintegra, supra densissime tuberculato-hispida et glandulosa tactu aspera, subtus densissime molliterque hispido-pilosa; capitula pauca longissime pedunculata solitaria vel ternata, pedunculis nudis vel pauci-bracteatis hispidulis et hirsutis; involucrum late campanulatum 7–8 mm. altum 3-seriatum; phyllaria extima triangulari-oblonga obtusa hispidula, interioribus oblongis obtusis vel acutis glabris vel dorso sparse scabris; radii ca. 5, ligulis ovalibus 4–5 mm. tantum longis luteis; paleae linearis-attenuatae 9 mm. longae glabrae vel ad carinam ciliolatae; achaenia 4–5 mm. longa subcompressa adpresso-pilosula late emarginata, latiuscule alata; pappi aristae 2 erectae inaequales ad 4 mm. longae scaberulae, squamis in cupulam 0.8 mm. longam laceratam coalitis.—Guatemala: Dept. Jutiapa: Rocky open pine forest, hills between Jutiapa and Plan de Urrutia, north of Jutiapa, alt. 900–1,200 meters, October 28, 1940, *Paul C. Standley* 75590 (type in Herb. Field Mus.).

Here are referred also eight other collections, from the departments of Chiquimula, Santa Rosa, Sacatepéquez, Chimaltenango, and Huehuetenango. One of them was distributed as *Wedelia acapulcensis* HBK., but if one may rely upon achene characters for separating these genera, the plant is a *Zexmenia* rather than a *Wedelia*. It is not closely related to any other Central American

species of the genus, and does resemble somewhat in its general appearance *Wedelia acapulcensis*.

Zexmenia phyllocephala (Hemsl.) Standl. & Steyermark, comb. nov. *Wedelia phyllocephala* Hemsl. Biol. Centr.-Amer. Bot. 2: 170. 1881. *Z. phyllostegia* Klatt, Leopoldina 25: 105. 1889. *Z. sub-sericea* Blake, Contr. U. S. Nat. Herb. 22: 635. 1941.—It is curious that all three names listed above were based upon material from the same region and perhaps from the same colony, between San Cristóbal and Río Chixoy, Alta Verapaz, Guatemala. The plant is very limited in distribution, apparently, and it is remarkable that it has been named so many times, but two of the names were based on the same collection number (*Bernoulli* 1077)! It is a characteristic shrub of the lower slopes of the Sierra de los Cuchumatanes in Quiché and Huehuetenango, being especially abundant upon the almost bare serpentine outcrops.

STUDIES OF
CENTRAL AMERICAN PLANTS—VI

BY

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STUDIES OF CENTRAL AMERICAN PLANTS—VI

PAUL C. STANLEY AND JULIAN A. STEYERMARK

In this brief paper there are described new species of plants from Guatemala, preparatory to publication of a flora of that country. A large proportion of the new species belong to the genus *Eupatorium*, which is represented more lavishly in Guatemala than in any other region of Central America.

MORACEAE

Cecropia sylvicola Standl. & Steyermark, sp. nov.—Arbor procera *sylvicola* superne copiose ramosa; folia magna firme coriacea, longipetiolata, petiolo tereti multicostulato usque 54 cm. longo et paullo ultra 1 cm. basi crasso densiuscule hirtello, nullo modo tomentoso; lamina magna suborbicularis breviter peltata, profunde vulgo fere ad basin ca. 9-partita, supra scabro-asperata, subtus pallidior ad nervos venasque hirtella vel hispidula, in statu adulto glabrata sed inter venulas prominulas atque arcte reticulatas minutissime tomentulosa, viridescens et in sicco brunnescens, segmentis oblongis vel obovato-oblongis usque 40 cm. longis et 11 cm. latis integris apice obtusissimis, saepe plus minusve plicatis; inflorescentia feminea crasse 3.5–6 cm. longe pedunculata, spicis numerosis congestis fere 1 cm. longe pedicellatis, 5–5.5 cm. longis 5–6 mm. crassis apice rotundatis.—Guatemala: Dept. Alta Verapaz: Dense wet mixed forest, mountains along the road between Tactic and the divide on the road to Tamahú, alt. 1,500–1,600 meters, April, 1941, *Paul C. Standley* 90762 (type in Herb. Field Mus.); also no. 90576, with the same data; same locality, April 9, 1939, *Standley* 71248.

This exceptionally distinct species, known only from imperfect material, has been found only in the botanically rich, usually very wet forest at this one locality in Alta Verapaz, where it grows in the midst of virgin forest. The trees are fairly plentiful, but all observed were so tall that it was impossible to reach the branches by ordinary means, and all the available material consists of dried leaves and more or less broken inflorescences found on the ground. From the two other Guatemalan species, as well as from most others found in Central America, *C. sylvicola* differs in its almost concolorous leaf surfaces and deeply lobate, coriaceous leaf blades.

Pseudolmedia simiarum Standl. & Steyermark, sp. nov.—Arbor excelsa usque ad 30 m. alta, trunco interdum 60 cm. vel ultra diam., ramulis crassis plus minusve flexuosis dense pilis longis mollibus patentibus fulvidis hirsutis; stipulae caducae usque 2.5 cm. longae angustae sat dense hirsutae; folia breviter petiolata magna chartacea, petiolo crasso 7-10 mm. longo hirsuto; lamina oblongo-elliptica 18-27 cm. longa 7.5-13 cm. lata apice abrupte breviter caudato-acuminata, basi oblique rotundata, supra viridis praeter costam nervosque puberulos vel hirtellos fere omnino glabra, subtus pallidior brunnescens ubique sat dense molliterque pilis longiusculis patentibus pilosa, costa gracili elevata, nervis lateralibus utroque latere ca. 17 gracillimis elevatis arcuatis prope marginem arcuato-conjunctis, venulis prominentibus laxe reticulatis; inflorescentiae femineae axillares 1-florae ut videtur sessiles; fructus immaturus globosus vel ovari-globosus 2-2.5 cm. longus sessilis basi et apice rotundatus ubique densissime molliter pilis subpatentibus fulvidis velutino-pilosus; bracteae longe persistentes rotundo-ovatae obtusae 5-6 mm. longae utrinque dense sericeo-pilosae.—Guatemala: Dept. Huehuetenango: In dense rich wet forest in a deep ravine, alt. 1,500 meters, vicinity of Maxbal, about seventeen miles north of Barillas, July 15-16, 1942, Julian A. Steyermark 48741 (type in Herb. Field Mus.). Between Maxbal and Xoxlac, Huehuetenango, July 17, 1942, Steyermark 38983 (sterile).

The bark, when cut, exudes a cream-colored milk-like sap. The vernacular name of "Durazno de mono" ("monkey-peach") alludes to the fact that the fruits resemble immature peaches, their dense pubescence being much like the "fuzz" found on a peach. When the senior author was at Huehuetenango in 1940 a woman who kept a small shop showed him a large sack filled with dried fruits of *durazno de monte*, as she called them, which she had secured, she said, for a "North American agriculturist" who wished to investigate this wild peach. He had never returned for the fruits, which she had been at some trouble to get for him. It is safe to say that he would have been very much disgusted at what he found, if he had sufficient knowledge to realize how little resemblance the fruits actually had to true peaches.

LORANTHACEAE

Struthanthus oliganthus Standl. & Steyermark, sp. nov.—Frutex parasiticus glaber ramosus, ut videtur erectus, ramis crassis teretibus, vetustioribus fuscis, novellis ochraceis vel fere cinnamo-

meis, internodiis plerumque brevibus; folia coriacea parva in sicco lutescentia breviter crasseque petiolata obovato-oblonga vel late cuneato-oblonga ca. 2.5 cm. longa, 9-14 mm. lata, apice rotundata, basin versus sensim cuneato-angustata et fere ad basin petioli decurrentia, penninervia sed nervis primariis fere obsoletis; inflorescentiae axillares parvae crasse vix ultra 3 mm. longe pedunculatae, 3-florae, floribus viridescentibus arcte sessilibus; calyx glaber brevis 1.2 mm. latus; corolla in alabastro clavato-cylindracea 3.5 mm. longa.---Guatemala: Dept. Huehuetenango: Above San Ildefonso Ixtahuacán, alt. 1,600-1,700 meters, August 15, 1942, Julian A. Steyermark 50672 (type in Herb. Field Mus.). Northwest of Cuilco, two-thirds the way up Cerro Chiquihui, above Carrizal, 1,350-2,300 meters, August 17, 1942, Steyermark 50824.

Related to *S. cassythoides* Millsp., a common species of Guatemala, but in that all or most of the inflorescences have much more numerous flowers and the stems are usually long, slender, flexuous, and more or less twining or even scandent.

Struthanthus tenuifolius Standl. & Steyermark, sp. nov.—
Frutex parasiticus dependens elongatus glaber, laxe ramosus, ramis gracilibus teretibus ut videtur radices non emitentibus, internodiis brevibus vel elongatis; folia coriacea graciliter ca. 4 mm. longe petiolata linear-lanceolata 3.5-6.5 cm. longa 3-5 mm. lata, apicem acutum vel subacuminatum versus sensim attenuata, basin versus longe sensim attenuata, 1-nervia; inflorescentiae axillares et terminales sublaxae ca. 2 cm. longae et aequilatae pauciflorae subcymosae, floribus ternatis crasse 2-3 mm. longe pedicellatis; calyx brevis truncatus paullo ultra 1 mm. latus; corollae non visae.---Guatemala: Dept. Huehuetenango: Ciénaga de Lagartero, below Miramar, alt. 300 meters, parasitic on *Taxodium mucronatum*, August 29, 1942, Julian A. Steyermark 51538 (type in Herb. Field Mus.).

The species is noteworthy for its very long and narrow, slender leaves and for the slender-pedicellate flowers.

ARISTOLOCHIACEAE

Aristolochia mollis Standl. & Steyermark, sp. nov.—*Frutex scandens*, ramis crassis densissime pilis brunnescentibus piloso-tomentosis, internodiis breviusculis; folia majuscula breviter petiolata crasse membranacea vel chartacea, petiolo crasso 6-8 mm. longo dense piloso-tomentoso; lamina ovalis vel ovali-elliptica 13-18 cm. longa 6-10 cm. lata, apice rotundata vel obtusissima et interdum

apiculata, basi anguste rotundata, basi ipsa interdum emarginata, integra, supra ubique dense piloso-hirsuta, nervis venisque prominulis laxe reticulatis, subitus paullo pallidior densissime velutino-pilosa, pilis patentibus pallide brunnescentibus, costa crassiuscula elevata, nervis lateralibus utroque latere ca. 7, venis prominentibus laxiuscule reticulatis; pedunculi axillares ut videtur 1-flori ca. 7 mm. longi; perianthium brunneo-purpureum intus glabrum extus dense breviter pilosum, parte basali utriculiformi 2.5 cm. longa, tubo brevissimo subito reflexo, limbo late rotundato-ovato 3.5 cm. longo integro apice rotundato; capsula juvenilis ca. 1 cm. longe crasseque pedicellata clavato-oblonga 2.5 cm. longa 5-7 mm. apicem versus crassa apice rotundata densissime pilis brunnescentibus adscendentibus pilosa.—Guatemala: Dept. Huehuetenango: Canyon tributary to Río Trapichillo, between Democracia and canyon of Chamushú, alt. about 1,000 meters, August 24, 1942, Julian A. Steyermark 51269 (type in Herb. Field Mus.).

Local name “Hoja del aire.” In general appearance the plant resembles *A. asclepiadifolia* Brandegee of Veracruz, but in that the leaves are sessile and deeply cordate at the base.

MENISPERMACEAE

Abuta Steyermarkii Standl., comb. nov. *Hyperbaena Steyermarkii* Standl. Bot. Ser. Field Mus. 22: 232. 1940.—The genus *Abuta* has not been recorded previously from North America, all the other species being South American. The present Guatemalan plant is related to *A. rufescens* Aubl., of the Guianas and Brazil, but is evidently distinct in its sessile rather than long-pedicellate pistillate flowers. In foliage the two species are almost exactly alike.

ANNONACEAE

Desmopsis guatemalensis Standl. & Steyermark, sp. nov.—Fru-tex 4-6-metralis, ramulis breviter denseque hispidulis vel pilosulis; folia inter minora breviter petiolata membranacea plus minusve lucida, petiolo 2-4.5 mm. longo dense brunnescenti-hirtello; lamina lanceolato-oblonga 4-6 cm. longa 1.2-1.8 cm. lata, apicem obtusum versus sensim attenuata, basi subacuta, utrinque sed subtus manifestius punctata, supra glabra vel tantum ad costam puberula, subtus fere concolor, primo adpresso-pilosa in statu adulto tantum ad costam adpresso-pilosa, costa gracili elevata, nervis lateralibus utroque latere 11-13; flores oppositifolii, pedunculo gracili 2 cm. longo, in statu fructifero usque ad 2.5 cm. longo, adpresso-piloso, 2-brac-

teato, bracteis 1.5–2 mm. longis; sepala ovata subacuta 2.5–4 mm. longa extus sericea intus glabra; petala carnososo-subcoriacea lutescentia lineari-lanceolata apicem versus sensim attenuata 20 mm. longa 1.5–3 mm. lata, extus sparse pilosula, intus glabra vel glabrata; antherae 1.5 mm. longae; baccae 8–9 mm. longe stipitatae globosae rubrae 12–15 mm. longae 10 mm. latae glabrae vel glabratae; semina subglobosa brunnea.—Guatemala: Dept. Quezaltenango: Montaña Chicharro, lower southeastern slopes of Volcán de Santa María, alt. about 1,500 meters, January 17, 1940, Julian A. Steyermark 34304 (type in Herb. Field Mus.); Dept. San Marcos: Above Finca El Porvenir, Loma Bandera Shac, southern slopes of Volcán de Tajumulco, 1,800–1,500 meters, March 9, 1940, Steyermark 37331.

Related to the Mexican *D. lanceolata* Lundell and *D. bibracteata* (Robinson) Safford but differing from both in its narrow petals and much smaller and narrower leaves.

Desmopsis izabalensis Standl. & Steyermark, sp. nov.—Arbor 6-metralis, ramulis densissime pilis patentibus brunnescensibus vel sordidis hispidulis; folia inter minora breviter petiolata firme membranacea plus minusve lucida, petiolo crassiusculo ca. 3 mm. longo dense hispidulo; lamina anguste oblongo-lanceolata 6–9.5 cm. longa 1.5–2.5 cm. lata apicem subacutum versus sensim longissime attenuata, basi obtusa vel subacuta, epunctata, supra tantum ad costam subimpressam breviter hispidula, aliter glabra, subtus fere glabra sed in statu adulto ad costam sparse adpresso-pilosa; flores oppositi-folii ut videtur penduli, pedunculo gracillimo in statu fructifero ca. 3 cm. longo sparse hispidulo vel fere glabro, bracteis non visis; baccae 5–6 mm. longe stipitatae globosae ca. 9 mm. diam. basi et apice rotundatae glabratae sed ut videtur in statu juvenili sparse adpresso-pilosae.—Guatemala: Dept. Izabal: On ridge top, along Río Frío, Cerro San Gil, alt. 75–150 meters, December 18, 1941, Julian A. Steyermark 41543 (type in Herb. Field Mus.).

In general appearance this is much like the preceding but the leaves are somewhat longer and narrower and not obviously punctate, while in *D. guatemalensis* they are very conspicuously punctate at all stages of development. The type material bears no flowers, which are likely to provide supporting characters.

CRUCIFERAE

Cardamine balnearia Standl. & Steyermark, sp. nov.—Herba erecta perennis ca. 35 cm. alta omnino glabra, radice perpendiculari

radices numerosas fibrosas emittente; caulis simplex inferne nudus, superne densissime foliatus; folia numerosissima longipetiolata laete viridia ca. 14-15 cm. longa, petiolo gracili basi nudo sed plus minusve dilatato et subamplexicauli; foliola 9-13 alterna vel opposita tenuiter membranacea saepe remota 4-6 mm. longe petiolulata late ovata usque ovato-oblonga vel lanceolato-oblonga 1-3 cm. longa 4-12 mm. lata, subacuta usque obtusissima, basi rotundata usque subacuta atque saepe obliqua, remote paucidentata vel brevissime remote lobulata, dentibus spinuloso-apiculatis, foliolo terminali vulgo paulo lateralibus majore; racemi terminales simplices vel e basi pauciramosi basi tantum foliaceo-bracteati vel nudi ca. 14 cm. longi laxe multiflori, pedicellis gracillimis 7-12 mm. longis adscendentibus; flores ca. 6 mm. longi, sepalis purpurascensibus ovalibus fere 3 mm. longis apice rotundatis; petala alba purpureo tincta obovata; siliquae immaturae 3.5 cm. longae 0.8 mm. crassae, stylo 3 mm. longo vix superne angustato; ovula numerosa.—Guatemala: Dept. Quezaltenango: Wet mossy bank, Aguas Amargas, western slope of Volcán de Zunil, alt. about 2,450 meters, January 14, 1941, *Paul C. Standley* 83332 (type in Herb. Field Mus.).

This plant probably is rare, since although the senior author has visited the type locality several times, he has found it but once. It is an exceptionally distinct species, doubtless related to *C. fulcrata* Greene and *C. innovans* O. E. Schulz, but differing from both in its numerous rather than usually three leaflets.

CAPPARIDACEAE

Capparis calciphila Standl. & Steyermark, sp. nov.—Arbor 12-metralis, ramis crassis brunneis densissime lepidotis, internodiis brevibus; folia firme coriacea crasse petiolata, petiolo 1.5-2.5 cm. vel interdum usque 4 cm. longo dense lepidoto; lamina elliptica vel saepius obovato-elliptica 8.5-13 cm. longa 4.5-6.5 cm. lata apice rotundata vel obtusissima et apiculata, basi obtusa vel late cuneato-obtusa, supra glabra lucida, nervis venisque prominulis laxe reticulatis, subtus lutescenti-brunnescens sat dense lepidota non pilosula, costa gracili maxime elevata, nervis venisque prominentibus atque laxe reticulatis; inflorescentiae axillares cymosae pauciflorae, pedunculis usque ad 9 cm. longis, pedicellis crassiusculis 8-14 mm. longis densissime brunneo-lepidotis; calyx ca. 3.5 mm. longus densissime brunneo-lepidotus fere ad basin lobatus, lobis in alabastro apertis anguste triangularibus acutis adpressis; petala intus alba extus densissime stellato-tomentosa 1 cm. longa vel ultra (in alabastro tantum visa);

stamina numerosa.—Guatemala: Dept. Alta Verapaz: Along knife-edge of a limestone ridge, Cerro Chinajá, between Finca Yalpemech and Chinajá, above source of Río San Diego, alt. 150–700 meters, April 1–2, 1942, Julian A. Steyermark 45616 (type in Herb. Field Mus.).

Here probably belongs *W. A. Schipp* S-655 from Jacinto Hills, British Honduras, distributed under a provisional name given it by the senior author, but never published because flowers were lacking. A sterile specimen from Lago de Amatitlán, Guatemala, also may be referable here. The proposed species is related to *C. indica* (L.) Fawc. & Rendle, which grows in various parts of Guatemala, chiefly in dry situations, but that has much shorter petioles, seldom more than 1 cm. long, and much smaller and relatively narrower leaves.

CRASSULACEAE

***Echeveria macrantha* Standl. & Steyermark, sp. nov.**—Herba erecta sparse ramosa, plus minusve suffrutescens, ramis usque 1 cm. crassis ochraceis apice tantum foliatis; folia ad apices ramorum dense rosulata sessilia rotundo-cuneata ca. 3 cm. longa atque 2–2.8 cm. lata, apice late rotundata vel subtruncata et brevissime apiculata, basi latissime cuneata, crassa carnosa utrinque copiose sed non dense hirtella in vivo pallide lutescenti-viridia roseo-marginata; pedunculus crassus 4.5 cm. longus ca. 3-florus, pedicellis in statu fructifero 8 mm. longis dense hirtellis; sepala fere libera 8 mm. longa lanceolato-oblonga apicem obtusum versus sensim angustata dense hirtella; corolla in statu fructifero persistens extus sat dense pubescens, segmentis fere liberis ca. 2 cm. longis anguste lanceolatis apicem versus sensim attenuatis dorso acute carinatis; follicula ca. 15 mm. longa sparse pubescentia brunnea, corpore lanceolato-oblongo ca. 8 mm. longo in rostrum gracile aequilongum sensim attenuato.—Guatemala: Dept. Jalapa: Dry rocky slopes, Montaña Miramundo at Buena Vista, alt. 2,000–2,200 meters, December 6, 1939, Julian A. Steyermark 32808 (type in Herb. Field Mus.).

This is the only known Central American species with pubescent foliage, the other species of the group being Mexican. Most of the Mexican ones have much more abundant pubescence than the Guatemalan plant, which differs from each of them also in some other respect. It is noteworthy for its remarkably large flowers.

***Echeveria huehuetea* Standl. & Steyermark, sp. nov.**—Planta acaulis glabra, radicibus carnosso-fibrosis; folia numerosa dense

rosulata sessilia oblongo-lanceolata usque subelliptica vel late cuneato-obovato-oblonga, 2–5 cm. longa, 1–2.5 cm. lata, apice sub-acuminata usque obtusa vel subrotundata et cuspidato-apiculata, basi latissime cuneata, utrinque viridia vel interdum purpurascens; caules erecti stricti 20–30 cm. alti simplices remote foliati, foliis valde reductis lanceolato-linearibus usque oblongo-lanceolatis usque ad 18 mm. longis acutis vel acuminatis sessilibus; flores laxe racemosi, racemo 7–13 cm. longo remote 5–11-floro, pedicellis crassis 2–3 mm. longis; sepala basi coalita valde inaequalia late linearia usque oblongo-ovata obtusa vel subacuta carnosa viridia subadpressa vel interdum plus minusve patentia 6–8 mm. longa; corolla rubra 8–10 mm. longa fere ad basin partita, lobis anguste lanceolatis suberectis apice paullo excurvis longe anguste attenuatis dorso carinatis; follicula ca. 8 mm. longa obliqua in rostrum subulatum sensim attenuata.

—Guatemala: Dept. Huehuetenango: On bluffs, Cumbre Papal, on slopes with southern exposure, between Cuilco and Ixmoquí, alt. 1,400–3,000 meters, August 19, 1942, Julian A. Steyermark 50934 (type in Herb. Field Mus.). On limestone bluffs in ravine with *Juniperus*, alpine areas in vicinity of Tunimá, 3,400 meters, Steyermark 48373. Pine-forested slopes, terrestrial, along Río Selegua opposite San Sebastián Huehuetenango, 2,000 meters, Steyermark 50420.

Corolla vermillion-red; leaves grass-green on both sides, or sometimes dull or deep green suffused with lavender or brownish purple, not glaucous. The three collections cited show considerable variation in leaf form but it is believed that they are conspecific. In Poellnitz's key to the species of *Echeveria* they run at once to *E. sessiliflora* Rose, a species of Chiapas that might well be expected in Guatemala, but they do not agree with the original description or with the one given by Poellnitz. The inflorescence in *E. huehueteca* is not at all secund.

***Echeveria Steyermarkii* Standl., sp. nov.**—Plantae acaules glabrae solitariae vel interdum caespitosae, radicibus fibrosis; folia vulgo numerosissima rosulata patentia vel adscendentia viridia interdum purpureo vel roseo tincta sessilia, anguste vel latissime oblongo-spathulata, 2.5–6.5 cm. longa 1–2 cm. lata, apice rotundata vel obtusissima et breviter obtuse apiculata, carnosa sed non crassa, basi latissime cuneata; scapi solitarii vel plures 5–20 cm. alti, floribus breviter racemosis vel subcorymbosis paucis, foliis caulinis interdum fere omnibus prope basin insertis, interdum fere ad apicem sparsis linearibus usque oblongis, majoribus usque 2 cm. longis obtusis adscen-

dentibus; flores 3–10 mm. longe pedicellati, pedicellis subgracilibus plerumque 8–15 mm. longis, bracteis oblongis vel fere linearibus pedicellis vulgo multo brevioribus; sepala fere ad basin libera inaequalia viridia carnosa 5–8 mm. longa oblonga vel ovato-oblonga obtusa adpressa vel subpatentia; petala basi connata rubra vel roseo-rubra 8–11 mm. longa lanceolata vel anguste lanceolata erecta sed apice paullo excura dorso carinata, apicem versus sensim attenuato-acuminata; antherae petalis bene breviores ca. 1.5 mm. longae ovales; follicula 7–8 mm. longa suberecta longirostrata brunneo-rubra.—Guatemala: Dept. Zacapa: On rocks, between Santa Rosalia de Mármol and San Lorenzo, alt. 1,200–1,600 meters, January 24, 1942, Julian A. Steyermark 43145 (type in Herb. Field Mus.). Dept. Sololá: Volcán de Santa Clara, 2,000–3,000 meters, Steyermark 46910, 47062; sometimes epiphytic. Among rocks, Volcán de Tolimán, slopes above San Lucas, 1,800–3,000 meters, Steyermark 47603. Dept. San Marcos: Between Sibinal and Ichiguán, 3,500–4,000 meters, epiphytic, Steyermark 36507.

The plants placed here show a great deal of variation in leaf form but it is believed that all represent a single species. Further collections may possibly show that two or more species are represented but it is believed that all the apparent variations may be explained by moisture and exposure conditions. The corolla is variously described as vermilion throughout, rose-red, or with petals reddish yellow edged with vermilion. The leaves may be either grass-green throughout or sometimes paler beneath, and often tinged with red or purple. The species is noteworthy for its small, few-flowered inflorescence and very long pedicels.

LEGUMINOSAE

***Bauhinia Calderonii* (Rose) Standl. & Steyermark, comb. nov.**
***Casparea Calderonii* Rose in Britt. & Rose, N. Amer. Fl. 23: 217. 1930.**

***Calliandra carcarea* Standl. & Steyermark, sp. nov.**—Frutex vel arbuscula gracilis, ramis ochraceis subteretibus, novellis dense hirtellis; folia 10–14 mm. longe petiolata, pinnis 1-jugis 4.5–7.5 cm. longis; foliola 7–11-juga inaequalia et saepe obliqua oblongo-elliptica usque ovata 12–23 mm. longa 4–8 mm. lata obtusa vel subacuta basi obliqua obtusa vel rotundata, glabra ciliata lucidissima, subtus paulo pallidiora penninervia, nervis venisque utrinque prominulis laxe reticulatis, subcoriacea; pedunculi axillares solitarii ca. 2 cm. longi graciles hirtelli, capitulis paucifloris; bracteae ca. 2 mm. longae

lineari-lanceolatae puberulae; calyx glaber ad dentes puberulus 3 mm. longus striatus, dentibus brevissimis; corolla 7-8 mm. longa glabra, limbo dilatato, ad dentes puberula; legumen 2.5-3 cm. longe stipitatum lineare 7-7.5 cm. longum 7-8 mm. latum apice obtusum et apiculatum, basi attenuatum, glabrum.—Guatemala: Dept. El Progreso, slopes of quebradas, between Calera and middle slopes of Volcán Siglo, alt. 2,000-2,200 meters, January 20, 1942, Julian A. Steyermark 42985 (type in Herb. Field Mus.).

In appearance this is much like *C. purpurea* (L.) Benth. of the Lesser Antilles, but that is glabrous throughout or nearly so while *C. carcarea* has abundant pubescence on the branches, leaf rachis, and peduncles.

Galactia sparsiflora Standl. & Steyermark, sp. nov.—Perennis herbacea volubilis, caulis gracillimus teretibus sparse strigosis vel glabratris; stipulae viridescentes subulatae erectae 2-2.5 mm. longae persistentes; folia 3-foliolata graciliter longipetiolata, rhachi 3-8 mm. longa, petiolo 1.5-4 cm. longo sparse strigoso vel glabro; foliola chartacea oblongo-lanceolata vel anguste oblonga prope vel infra medium latissima vel interdum supra medium paullo latiora, 3-6.5 cm. longa 8-15 mm. lata, acuta vel acuminata, basi obtusa vel rotundata, supra lucida viridia sparse scabro-strigosa, subtus paullo pallidiora, saepe lucida, sparse scabro-strigosa vel fere omnino glabra, venis utrinque elevatis atque arcte reticulatis; pedunculi axillares 1-flori 5-7 mm. longi; calyx sub legumine persistens 4-5 mm. longus turbinatus adpressus tenuiter strigosus ad medium 4-dentatus, dentibus tubo paullo brevioribus, dorsali ovato subobtuso integro, carinali angustiore acuminato aequilongo, 2 lateralibus brevioribus ovatis acuminatis; legumen anguste oblongum vel lineari-oblanceolatum 2.5-3 cm. longum 4-5 mm. latum, apice acutum et abrupte longirostratum, rostro dense strigoso, basin versus sensim attenuatum, elastice dehiscens sparse strigosum subseptatum; semina 2-3 subcompressa lucida late ovalia ca. 4 mm. longa brunnea nigromaculata.—Guatemala: Dept. El Progreso: In forest east of Finca Piamonte, Sierra de las Minas, alt. 2,500 meters, February 11, 1942, Julian A. Steyermark 43837 (type in Herb. Field Mus.). Hills between Finca Piamonte and slopes southeast, Steyermark 43432. Between Calera and summit of Volcán Siglo, Sierra de las Minas, 2,000-3,300 meters, Steyermark 43031.

All three collections are in fruit. The plant could be referred about equally well to either *Galactia* or *Calopogonium*, but if the

usual characters for separating those groups are reliable, it is better placed in *Galactia*. It does not resemble closely any other Central American species of *Galactia*, but does somewhat suggest *Calopogonium lanceolatum* Brandeg.

Mimosa canahuensis Standl. & Steyermark, sp. nov.—Frutex scandens, ramis obtuse angulatis dense pilosulis et hispidulis, aculeis recurvis basi valde dilatatis brunnescensibus armatis; folia magna 15–20 cm. longa, rhachi dense recurvo-aculeata et sordide pubescente, pinnis 4–6-jugis 4.5–7.5 cm. longis; foliola 7–11-juga crasse membranacea ovali-oblonga vel subovalia 14–19 mm. longa 5–8 mm. lata, apice rotundata vel obtusissima, basi obliqua rotundata, supra intense viridia puberula, subtus pallidiora sat dense pilosula penninervia; pedunculi axillares monocephali crassi ca. 1.5 cm. longi puberuli superne aculeolati, floribus capitatis; legumina numerosa sessilia vel subsessilia ca. 2 cm. longa atque 8–9 mm. lata, basi et apice rotundata vel obtusa, sat dense setosa, setis pallide lutescentibus 2–3 mm. longis, marginibus incrassatis dense rigide setosis, valvulis continuis non articulatis; semina ca. 3.—Guatemala: Dept. El Progreso: Climbing in thickets, Montaña Canahui, between Finca San Miguel and summit of mountain, near upper limits of Finca Caieta, alt. 1,600–2,300 meters, February 10, 1942, Julian A. Steyermark 43758 (type in Herb. Field Mus.).

A well-marked species, whose affinities within the genus are uncertain. It is not closely related to any other known from Guatemala, nor does it show any close relationship with any of the species treated by Britton and Rose.

Mimosa Donnell-Smithii (Britt. & Rose) Standl. & Steyermark, comb. nov. *Neomimosa Donnell-Smithii* Britt. & Rose, N. Amer. Fl. 23: 173. 1928. Apparently a rare plant, not represented among recent collections made in Guatemala.

Pithecolobium saxosum Standl. & Steyermark, sp. nov.—Arbor ca. 5-metralis, ramulis brevibus irregularibus dense hirtellis spinis stipularibus crassis rigidis 7–10 mm. longis sat dense armatis; folia 1.5–2.5 cm. longe petiolata, petiolo gracili dense hirtello apice glandula sessili crateriformi onusto, pinnis 1-jugis; foliola 1-juga coriacea ovalia vel late oblongo-obovata 2.5–4.5 cm. longa 1.5–2.5 cm. lata, apice rotundata et saepe emarginata, basi rotundata vel late obtuse cuneata, supra vulgo lucida dense velutino-puberula, subtus sat dense velutino-pilosula, nervis venisque subtus promi-

nentibus conspicuis; flores spicati, spicis in paniculas parvas dispositis 1-2 cm. longis densis vel plus minusve inferne interruptis ca. 8 mm. latis saepe graciliter longipedunculatis, floribus arcte sessilibus; bracteae oblongo-lanceolatae persistentes vix 1 mm. longae puberulae; calyx vix ultra 1 mm. longus dense albido-puberulus; corolla ca. 3 mm. longa minute sericea; legumen ignotum.—Guatemala: Dept. Chiquimula: Edge of arroyo, Quebrada Shusho, above Chiquimula, on the road to Zacapa, alt. about 480 meters, October 14, 1940, *Paul C. Standley* 74367 (type in Herb. Field Mus.); same locality, October 9, 1940, *Standley* 73726. Dept. Zacapa: Vicinity of Zacapa, 200 meters, in brushy pasture, October, 1940, *Standley* 74195.

In its small flowers this suggests *P. microstachyum* Standl., of Guatemala and Salvador, but in that the leaves are glabrous or essentially so. The copious pubescence allies *P. saxosum* with *P. Brownii* Standl. and *P. Johanseni* Standl., both of which grow in Guatemala, but they have substantially larger flowers.

Pithecolobium Stevensonii (Standl.) Standl. & Steyerm., comb. nov. *Inga Stevensonii* Standl. Trop. Woods 23: 7. 1930.—This species has been collected several times recently in Guatemala in the departments of Petén, Alta Verapaz, and Izabal.

Pithecolobium vulcanorum Standl. & Steyerm., nom. nov. *Cojoba guatemalensis* Britt. & Rose, N. Amer. Fl. 23: 30. 1923, not *Pithecolobium guatemalense* Standl. 1929.

Pithecolobium Tuerckheimii (Britt. & Rose) Standl. & Steyerm., comb. nov. *Cojoba Tuerckheimii* Britt. & Rose, N. Amer. Fl. 23: 30. 1928.

RUTACEAE

Esenbeckia echinoidea Standl. & Steyerm., sp. nov.—Arbor 5-7-metralis, ramulis crassiusculis dense pilis albidis strigosis serius glabratris; folia 1-foliolata, petiolo gracili 1.5-6 cm. longo sparse strigoso; foliola late elliptica 9-28 cm. longa 4.5-15 cm. lata obtusa vel subrotundata, basi rotundata vel obtusa, supra glabra vel in statu juvenili sparse puberula, subtus paullo pallidiora, sparse pilosula vel in statu adulto fere omnino glabra, nervis venisque utrinque prominentibus vel prominulis et arcte reticulatis; capsula pedunculum crassum erectum 5-6 cm. longum terminans globosa vel depresso-globosa ca. 4 cm. lata et 2.5 cm. alta lignosa durissima

5-loculata ubique densissime echinis crassis acutiusculis duris hirtellis inaequalibus usque ad 1 cm. longis obtecta.---Guatemala: Dept. Chiquimula: Brushy rocky hillside, between Ramírez and Cumbre de Chiquimula, on the road between Chiquimula and Zacapa, alt. 400–600 meters, October 15, 1940, *Paul C. Standley* 74456 (type in Herb. Field Mus.). Dept. El Progreso: Barranquillo, 650 meters, *Steyermark* 46452. Dept. Zacapa: Between Agua Blanca and Cumbre de Chiquimula, 350–500 meters, *Standley* 74413. Dept. Guatemala: Without locality, *Ignacio Aguilar* 95. Near Amatitlán, 1,170 meters, in dry forest, *Standley* 61395.

From all species known on the mainland of North America this differs in its 1-foliolate (not simple) leaves and very densely echinate fruit. The fruit is very hard and woody, and so densely beset with hard woody spines that its normal 5-angulate form is obscured and it appears to be depressed-globose.

***Casimiroa emarginata* Standl. & Steyermark, sp. nov.**—*Arbor* 15-metralis, ramulis crassis pallide lenticellatis, glabris vel sparse breviter pilosulis, gemmis axillaribus subglobosis densissime pilis albis pilosulis; folia longipetiolata 3-foliolata, petiolo gracili 5–8 cm. longo glabro, petiolulis 1–1.5 cm. longis; foliola membranacea elliptica vel late elliptica 7–10 cm. longa 4–7 cm. lata, apice rotundata et breviter emarginata vel apicem angustum emarginatum versus breviter angustata, basi inaequaliter rotundata vel obtusissima, glabra, supra intense viridia sublucida, subtus pallidiora; fructus ut videtur ovalis in statu sicco 5–5.5 cm. altus 3.5–4 cm. latus, apice leviter bilobus.—Guatemala: Dept. San Marcos: Growing near a house (planted?) at Tajumulco, northwestern slope of Volcán de Tajumulco, alt. 2,300–2,800 meters, February 28, 1940, *Julian A. Steyermark* 36931 (type in Herb. Field Mus.).

It is unsatisfactory to describe another species in a genus in which the species already known are suspected to be unstable, but this particular collection can not be associated readily with any of the species known heretofore. From *C. edulis* Llave & Lex. it differs in its 3-foliolate, very obtuse or rounded leaflets, and from *C. Sapota* Oerst., which is not known from Guatemala, in its rounded and broad-based leaflets. It is difficult to believe that the Guatemalan tree is only a variant of the latter species, and it scarcely can be associated with any of the extreme forms of *C. edulis*.

***Galipea guatemalensis* Standl. & Steyermark, sp. nov.**—*Frutex* glaber, ramulis gracilibus irregularibus, internodiis ut videtur brevi-

bus; folia 1-foliolata, petiolo 8–25 mm. longo; foliola firme membranacea elliptica vel oblongo-elliptica 10–20 cm. longa 4.5–8.5 cm. lata abrupte cuspidato-acuminata, basi acuta, supra intense viridia lucida, subtus pallidiora, margine subundulato, nervis lateralibus utroque latere ca. 12 prominentibus, venis tenerrimis prominulis laxe reticulatis, lamina sat dense pellucido-punctata; pedunculi breves 1 cm. longi, fructu solum uno ut videtur maturante; capsulae carpella oblique oblonga sessilia 2 cm. longa 8 mm. lata, apicem anguste obtusum versus sensim angustata, basi rotundata, plus minusve rugosa, glabra; semina vix compressa fusco-ferruginea 1 cm. longa 4 mm. lata.—Guatemala: Dept. Izabal: Río Dulce, between Livingston and six miles up the river, on the north side of the river, near sea level, April 14, 1940, Julian A. Steyermark 39448 (type in Herb. Field Mus.).

In continental North America only one other species of the genus has been found. It is a shrub or tree of Darién, Panama, with 3-folio-late leaflets.

BURSERACEAE

Bursera permollis Standl. & Steyermark, sp. nov.—Arbuscula ca. 5-metralis, ramulis crassis pallidis dense breviter pilis patentibus pilosulis; folia longipetiolata 3-foliolata, petiolo 4–5 cm. longo moliter pilosulo; foliola 3–12 mm. longe petiolulata crasse membranacea ambitu variabilia orbicularia usque late elliptica, rotundo-rhombea vel obovato-orbicularia, 5–10 cm. longa 4–8.5 cm. lata, apice obtusa vel saepius rotundata at subito caudato-acuminata, basi late cuneata vel saepius rotundata vel subcordata, integra, supra sparse pilosa, subtus densius velutino-pilosa, nervis venisque elevatis laxe reticulatis; inflorescentiae e nodis defoliatis nascentes breves pauciflorae, ramis crassissimis pilosulis, floribus breviter crasse pedicellatis; fructus 3-valvis densiuscule puberulus vel glabratus 1 cm. longus obtusus; semen 1 albescens 8 mm. longum 6 mm. latum.—Guatemala: Dept. Jutiapa: In hedge, vicinity of Jutiapa, alt. 850 meters, October–November, 1940, Paul C. Standley 75245 (type in Herb. Field Mus.). Between Jutiapa and La Calera, southeast of Jutiapa, 850 meters, Standley 76039, 76100. Dept. Chiquimula: Along stream in cañada, Caracol Mountain north of Quezaltepeque, 1,200–1,400 meters, November, 1939, Steyermark 31407.

Local names "Jiote" and "Palo jiote de huis." From all other Central American species of *Bursera* this is distinguished at once by its 3-folio-late leaves with entire leaflets.

MELIACEAE

Guarea chirriactensis Standl. & Steyermark, sp. nov.—Arbor excelsa 18-metralis, ramulis crassis dense elevato-lenticellatis dense pilis brevissimis adpresso-pilosulis, serius glabratis; folia magna 6-foliolata longipetiolata, rhachi sicut petiolo sparse pilosula vel fere glabra, petiolulis crassis 5–8 mm. longis; foliola firme membranacea oblongo-ovata vel elliptico-oblonga 11–26 cm. longa 6–12 cm. lata, apice obtusa vel subrotundata et abrupte breviter apiculato-acuminata, basi obtusa vel subrotundata atque breviter ima basi acutata, utrinque glabrata vel subglabra, in axillis non barbata, costa supra subimpressa subtus valde elevata, nervis lateralibus gracilibus subtus elevatis; paniculae axillares sessiles repetitive ramosae petiolum vix aequantes ca. 8–9 cm. longae, ramis crassis sparse pilosulis vel fere glabris, pedicellis glabratis subgracilibus 2–4 mm. longis; calyx latissime campanulatus 3.5 mm. latus 2 mm. altus sparse strigosus basi fere truncatus brevissime dentatus, dentibus latissime rotundatis; petala ca. 6 mm. longa late oblonga obtusissima extus dense strigosa; tubus staminalis 3 mm. longus vel paulo ultra inferne glaber, superne pubescens.—Guatemala: Dept. Alta Verapaz: Along route no. 5 between Chirriacté and Semococh, alt. 500–900 meters, May 10, 1942, Julian A. Steyermark 46355 (type in Herb. Field Mus.). South of Cubilgüitz, 300–400 meters, Steyermark 44541 (sterile).

The relationship of this Guatemalan tree is with *Guarea Chichon* C. DC. and *G. Trompillo* C. DC., both of which occur in Guatemala. They have much longer petals, a much larger, rather deeply and conspicuously dentate calyx, and usually narrow-based leaflets.

Trichilia privigna Standl. & Steyermark, sp. nov.—Arbor 8-metralis, ramulis gracilibus brunnescens vel fuscous vel puberulis cito glabratis subteretibus; folia inter minora pinnatum 3-foliolata, petiolo gracili 12–15 mm. longo glabratu, petiolulis 3–5 mm. longis; foliola elliptica usque obovato-oblonga vel obovato-elliptica 3–8.5 cm. longa 1.5–4 cm. lata, abrupte acuminata, acumine ipso acuto vel obtuso, basi cuneato-acuta vel acuta, firme membranacea, supra viridia tantum ad costam puberula, subtus brunnescens glabra vel glabrata, foliolis lateralibus terminali vulgo multo minoribus; paniculae axillares longipedunculatae 5–8 cm. longae laxe multiflorae, ramis sparse puberulis vel fere glabris, floribus breviter pedicellatis viridescentibus; calyx glaber vel glabratu 1 mm. latus 0.8 mm. altus breviter dentatus, dentibus latis-

simis apiculato-subacutis; corolla in alabastro extus minutissime strigillosa 1.5 mm. longa; ovarium dense strigosum.—Guatemala: Dept. Petén: Steep shaly slopes along Río Santa Isabel, between mouth of Río Sebol and El Porvenir, alt. 100 meters, April 21, 1942, Julian A. Steyermark 45827 (type in Herb. Field Mus.).

In all characters this is so much like *T. breviflora* Blake & Standl. of the same general region that it may be only a form of that species. The texture of the leaves is similar, but in *T. breviflora* all the several collections now known have uniformly 1-foliolate leaves. Those of *T. privigna* are all 3-foliolate, and until intermediate forms are collected it may stand as a distinct species.

MALPIGHIACEAE

***Mascagnia excelsa* Standl. & Steyermark, sp. nov.**—Arbor praeter inflorescentiam fere omnino glabra, ramis gracilibus subteretibus sparse lenticellatis ochraceis vel viridescentibus, internodiis elongatis; folia majuscula breviter petiolata crasse membranacea lucida, petiolo crasso 6–13 mm. longo facie superiore prope apicem glandulis 2 magnis valde elevatis onusto; lamina oblongo-lanceolata vel ovato-lanceolata 13–17 cm. longa 5–7.5 cm. lata longiacuminata, basi obtusa vel rotundata, supra laete viridis, nervis prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus prominentibus; inflorescentia paniculata axillaris sessilis vel breviter pedunculata repetitive ramosa multiflora foliis interdum longior, ramis rectis sparse brunneo-puberulis vel subtomentulosis, bracteis bracteolisque parvis deltoideis vel subulatis vix ad 2 mm. longis persistentibus, pedicellis plerumque 3–5 mm. longis superne valde incrassatis; sepala glabrata ca. 3 mm. longa, glandulis ovalibus vel suborbicularibus sepalis dimidio brevioribus; petala pallide lutea extus glabra longiunguiculata ca. 8 mm. longa, lamina suborbiculari inconspicue sinuato-dentata; samarae glabrae 2.5–3.5 cm. latae 2–2.5 cm. altae, alis lateralibus tenuibus ad marginem irregulariter undulatis, crista dorsali brevi integra.—Guatemala: Dept. Izabal: Río Dulce, between Livingston and six miles up the river, on the north side, at sea level, April 14, 1940, Julian A. Steyermark 39456 (type in Herb. Field Mus.). Río Dulce, two to four miles west of Livingston, on south side of the river, April 16, 1940, Steyermark 39452.

The nearest Central American relative of this species is *M. rivularis* Morton & Standl., found in Alta Verapaz and Izabal, Guatemala, but that is distinguished at once by the inconspicuous, not at all elevated glands at the apex of the petiole. Another related

species is *M. jamaicensis* Urban & Niedenzu, known only from Jamaica.

DICHAPETALACEAE

Dichapetalum bullatum Standl. & Steyermark, sp. nov.—Frutex erectus vel subscandens, ramulis ochraceis plus minusve lucidis, novellis dense pilis longis sordidis vel brunnescens hispidis; folia magna brevissime petiolata crasse membranacea, petiolo crasso 5–8 mm. longo vel paullo longiore dense hispido; lamina elliptica vel late elliptica, interdum oblongo-elliptica vulgo 17–28 cm. longa atque 11–18 cm. lata, subito acuta vel breviter acuminata, basi rotundata vel subcordata, supra sparse hispida vel in statu adulto fere glabra, nervis venisque conspicue impressis, superficie insigniter bullata, subtus dense pilis longiusculis rigidiusculis hirsuta vel hispida, costa nervisque elevatis, venis quoque elevatis et laxe reticulatis; inflorescentia parva multiflora terminalis vel pseudo-terminalis e basi ramosa (vel ex inflorescentiis pluribus composita), ramis primariis gracillimis 1–1.5 cm. longis dense hispidis, floribus ad apicem rami paucis longe pedicellatis, pedicellis fere filiformibus hispidulis; sepala anguste oblonga obtusa 3–3.5 mm. longa extus dense albido-tomentulosa et pilis longis albis rigidis adpressis hispida; petala sepalis aequilonga glabra alba apice biloba; filamenta gracilis glabra petalis longiora; ovarium dense albo-tomentosum.—Guatemala: Dept. Izabal: Along road between Puerto Barrios and Santo Tomás, about 1.5 miles southeast of Puerto Barrios, at sea level, December 7, 1941, Julian A. Steyermark 39874 (type in Herb. Field Mus.). Between Virginia and Lago de Izabal, Montaña del Mico, 50–500 meters, Steyermark 38803. Puerto Barrios, in wet thickets or *Manicaria* swamps, April–May, 1939, Standley 72813, 73053.

The petals are white when fresh but become blackish purple in drying. The species is a very distinct one, noteworthy for its abundant, hirsute or hispid pubescence and very large and broad, conspicuously bullate leaves. Two other members of the genus are found in Guatemala.

EUPHORBIACEAE

Euphorbia cuchumatensis Standl. & Steyermark, sp. nov.—Subgenus *Chamaesyce*. Fruticulus erectus 20–30 cm. altus dense et saepe intricate ramosus, inferne frutescens, superne herbaceus, radice crassa lignosa, caulis vetustioribus fuscescentibus teretibus, novellis pallidis sat dense pilis albis patentibus fere rectis

foliosis, internodiis foliis longioribus; folia parva brevissime petiolata opposita in sicco pallida crassiuscula oblique deltoideo-ovata vel ovato-ovalia, vix 1 mm. longe petiolata, 5–10 mm. longa 3.5–7 mm. lata apice obtusissima vel subrotundata, basi oblique subcordata vel rotundata, interdum subacutata, prope apicem inconspicue undulato-denticulata vel fere integra, utrinque sat dense pilis pallidis mollibus patentibus pilosula; involucra numerosa axillaria vel terminalia solitaria breviter pedunculata dense pilosula late turbinata basi acuta, appendicibus suborbicularibus 1 mm. longis et aequilatis glabris apice late rotundatis patentibus conspicuus; capsula 2 mm. lata vel paullo ultra pubescens; semina tumida brunnescenti-ochracea ad angulos subincrastata, faciebus fere laevibus.—Guatemala: Dept. Huehuetenango: Sierra de los Cuchumatanes, between Nentón and Las Palmas, alt. 800–1,200 meters, August 30, 1942, Julian A. Steyermark 51646 (type in Herb. Field Mus.).

A well-marked species, noteworthy for its dense erect habit, grayish, densely pubescent leaves, and the conspicuous white appendages of the involucre. It is not closely related to any other Central American species, and it does not agree with any of the numerous Mexican ones of which material has been available for comparison.

CELASTRACEAE

Microtropis ilicina Standl. & Steyermark, sp. nov.—Arbor glabra 9–12-metralis, ramulis purpureo-fuscis; folia petiolata coriacea integra, petiolo crasso pallido 7–10 mm. longo; lamina elliptica vel oblongo-elliptica, prope medium latissima, 6.5–9.5 cm. longa 2.5–4.5 cm. lata, acuta vel subacuminata, acumine ipso obtuso, basi acuta, utrinque lucida, supra in sicco lutescenti-viridis, costa nervisque prominulis, subtus pallidissima, costa elevata, nervis lateralibus utroque latere ca. 8 vix prominulis, venis inconspicuis laxe reticulatis; pedunculi 1–1.5 cm. longi crassi 1–2-dichotomi, cymis dense paucifloris 1–2 cm. latis, pedicellis crassis brevibus, bracteis latis fusco-marginatis; sepala exteriora pallida 1.5 mm. longa 2 mm. lata fusco-marginata, interiora majora, margine erosodenticulata; capsula anguste obovata apice acuta vel obtusa, prope basin angustata, 12–15 mm. longa.—Guatemala: Dept. Zacapa: Southern slopes of Volcán Gemelos, Sierra de las Minas, alt. 2,100–3,200 meters, January 26, 1942, Julian A. Steyermark 48284 (type in Herb. Field Mus.); also no. 43280, with the same data. Río Repollal, 2,100–2,400 meters, January, 1942, Steyermark 42545.

Dept. Huehuetenango: Cerro Pixpix, above San Ildefonso Ixtahuacán, 2,800 meters, *Steyermark* 50650, 50655.

From *M. occidentalis* Loes., a widespread species of Central America, this differs conspicuously in its much thicker leaves, which are very pale beneath and silvery in the fresh state, not green.

SAPINDACEAE

Serjania hispida Standl. & Steyer., sp. nov.—Frutex scandens, caulibus gracilibus angulatis ubique dense pilis longis brunneis patentibus setoso-hispida, internodiis elongatis; stipulae fere filiformes 1 cm. longae vel ultra brunneo-hispidae; folia modica membranacea 3-foliolata 2-3 cm. longe petiolata, petiolo nudo dense hispido; foliola lateralia sessilia oblique ovata 6-7.5 cm. longa abrupte caudato-acuminata, basi oblique rotundata; foliola terminalia rhombeo-ovata vel rhombeo-elliptica ca. 13 cm. longa atque 6.5 cm. lata, caudato-acuminata, basi subabrupte cuneato-angustata; foliola omnia grosse remote crenato-dentata supra viridia dense hispida, subtus paullo pallidiora dense molliter hirsuta; inflorescentiae axillares ca. 7 cm. longe pedunculatae laxe multiflorae ca. 5 cm. longae et 3 cm. latae densissime pilis longis brunneis setoso-hispidae, floribus longe graciliter pedicellatis, bracteis fere filiformibus hirsutis ca. 5 mm. longis; sepala fere 4 mm. longa lata densissime brunneo-hispida; petala alba glabra.—Guatemala: Dept. Alta Verapaz: Damp forested slopes, along road between San Cristóbal and Chixoy, alt. 1,200-1,300 meters, February 19, 1942, *Julian A. Steyermark* 43926 (type in Herb. Field Mus.).

So many species of *Serjania* have been described from Mexico and Central America that one would suppose a name could be found for every possible form. Apparently, however, the number of valid species is large, and there are many possible combinations of characters. Both this and the following species are noteworthy for their abundant stiff spreading pubescence. They are not satisfactorily referable to any of the species of the region represented in the herbarium by authentic material, nor do they appear to be particularly close to any of them. *S. hispida* is known only from flowering specimens.

Serjania phaseoloides Standl. & Steyer., sp. nov.—Frutex scandens, caulibus gracilibus profunde sulcatis et angulatis, tantum ad angulos dense pilis rigidiusculis flavescentibus setoso-hirsutis; folia ca. 4 cm. longe petiolata 3-foliolata membranacea, petiolo

gracili nudo sparse hispidulo; foliola lateralia deltoideo-ovata vel ovata 7–8 cm. longa acuminata vel longiacuminata basi vulgo subcordata vel truncata ca. 1.5 cm. longe petiolulata; foliola terminalia late rhomboeо-ovata 7–10 cm. longa 5.5–7 cm. lata acuminata, basi rotundata longe petiolulata; foliola omnia concoloria remote grosse undulato-dentata vel interdum basin versus sublobata, utrinque sparse pilosula vel glabrata; inflorescentiae longipedunculatae ca. 9 cm. longae et 3 cm. latae, laxe multiflorae hirtellae, floribus albis longe graciliter pedicellatis; sepala 3 mm. longa extus dense minute puberula vel subtomentulosa; fructus juvenilis (7 mm. tantum longus) late obovatus apice emarginatus sparse minutissime puberulus vel ut videtur cito glabratu, ad angulos ciliolatus.—Guatemala: Dept. Huehuetenango: Along Río Cuilco between Cuilco and San Juan, 2.5 miles west of Cuilco, alt. 1,200–1,300 meters, August 18, 1942, Julian A. Steyermark 50908 (type in Herb. Field Mus.).

Although this and the preceding species have rather similar pubescence on the stems, there is no reason to suppose that they are closely related. In *S. hispida* the pubescence is evenly distributed all over the stems, while in *S. phaseoloides* it is confined to the edges of the angles. In the former the lateral leaflets are sessile, in *S. phaseoloides* long-petiolulate.

TILIACEAE

Sloanea petenensis Standl. & Steyermark, sp. nov.—Ramuli graciles striati glabri vel glabrati; folia majuscula longipetiolata chartacea sublucida, petiolo gracili 2–4 cm. longo glabro; lamina anguste elliptico-oblonga 18–27 cm. longa 7.5–9 cm. lata anguste longiacuminata, basin obtusam versus paullo angustata, integra vel undulata, utrinque glabra, costa gracili elevata, nervis lateralibus utroque latere ca. 8 teneris utrinque prominentibus arcuatis angulo lato adscendentibus, venis utrinque prominulis et arcte reticulatis; capsulae (delapsae tantum visae) ovoideo-globosae ca. 3 cm. longae dense puberulae et sparse hispidulae, ubique dense echinis crassis rigidis persistentibus ca. 8 mm. longis puberulis dense munitae, valvis lignosis 4 mm. crassis intus glabris.—Guatemala: Dept. Petén: Forest between Finca Yálpemech, along Río San Diego, and San Diego on Río Cancuén, alt. 50–150 meters, March 25, 1942, Julian A. Steyermark 45309 (type in Herb. Field Mus.).

The material is most unsatisfactory for description, consisting of a leafy branch and some detached, very old fruits that probably were found on the ground. There is no doubt, however, that the

collection represents a species quite distinct from any of those reported previously from northern Central America.

MALVACEAE

Abutilon orientale Standl. & Steyermark, sp. nov.—*Herba* erecta usque 1 m. alta ut videtur perennis, gracilis, ramosa, ramis teretibus sparse minute stellato-puberulis et copiose pilis longis mollibus patentibus simplicibus pilosis, sat dense foliatis; folia inter minora longipetiolata, petiolis gracilibus 1.2–4 cm. longis ut caulibus indutis; lamina late cordato-ovata 4.5–7.5 cm. longa 2–6 cm. lata sensim subitove longiacuminata, basi profunde cordata, crenata, supra sparse pilis longis patentibus simplicibus pilosa, subtus vix pallidior sparse stellato-pilosa; stipulae anguste lineares 5–6 mm. longae virides; flores numerosi plerumque laxe cymosi et subpaniculati, axillares et terminales, longe graciliter pedicellati, pedicellis stellato-puberulis et pilis longis simplicibus pilosis; calyx late campanulatus 4 mm. longus dense stellato-pilosus, lobis tubo multo brevioribus latissime ovatis filiformi-cuspidatis; petala pallide lutea latissime obovata 5 mm. longa glabra; calyx in statu fructifero carpellis plus quam duplo brevior; fructus carpella 5 dense stellato-pubescentia apice abrupte rostrata, corpore 4–5 mm. longo, rostris brevibus oblique divergentibus vix 2 mm. longis; semina in quoque carpello 2.—Guatemala: Dept. Zacapa: In shaded quebrada, along road between Agua Blanca and Cumbre de Chiquimula, alt. 350–500 meters, October 15, 1940, *Paul C. Standley* 74420 (type in Herb. Field Mus.).

Perhaps related to *A. umbellatum* (L.) Sweet, which is the closest relative among the Central American species. In that, a much stouter plant of different appearance, the stems are stellate-hirsute and the calyx is much larger, usually almost or quite equaling the body of the carpels. The disposition of the inflorescence is conspicuously different in the two species.

Abutilon tridens Standl. & Steyermark, sp. nov.—*Frutex* vel *arbuscula* 2.5–4.5 m. alta ramosa, ramis crassiusculis dense molliter stellato-pilosus vel tomentosis, tomento inaequali et saepe quasi tuberculoso; stipulae persistentes 12–15 mm. longae lineares stellato-tomentosae basi paullo dilatatae; folia magna longipetiolata membranacea, petiolis 4–17 cm. longis, superioribus inferioribus multo brevioribus; lamina late cordato-ovata vel rotundato-cordata 12–24 cm. longa 8.5–18 cm. lata, acuminata vel subabrupte longiacuminata,

basi profunde anguste cordata, crenulata vel subintegra, supra viridis sparse stellato-pilosa vel fere glabra, subtus glauca dense stellato-pilosa et ad nervos venasque pilis longis simplicibus pilosa; pedunculi axillares ca. 16 cm. longi vulgo 3-flori, rarius 1-flori, pedicellis crassis erectis plerumque 4–6 cm. longis infra calycem articulatis; calyx 2.5–3 cm. longus densissime pilis brevibus stellatis brunneo-tomentosus profunde lobatus, lobis late ovatis acutis vel acuminatis intus dense tomentulosus; petala lata 4–5 cm. longa aurantiaca rubro-venosa glabra, apice latissime rotundata vel truncata, venis conspicuis elevatis; columna staminifera longe exserta corolla fere duplo longior; fructus carpella ca. 12 et 2.5–3 cm. alta dense stellato-hispida apice longirostrata, rostris ca. 5 mm. longis divaricatis; semina ca. 8.—Guatemala: Dept. El Progreso: Along small creek, hills between Finca Piamonte and the slopes southeast, Sierra de las Minas, alt. 2,400 meters, February 4, 1942, Julian A. Steyermark 43439 (type in Herb. Field Mus.). Dept. Zacapa: Upper reaches of Río Sitio Nuevo, Sierra de las Minas, 1,500–1,800 meters, January, 1942, Steyermark 43240. Upper slopes, Río Repollal, Sierra de las Minas, 2,100–2,400 meters, Steyermark 42532.

This is very closely related to *A. Pachecoanum*, which we described recently from the Occidente of Guatemala. That differs in its deep wine-red rather than orange-yellow petals, and in having the stamen tube of about the same length as the petals. There are also minor differences in vegetative characters.

Malvastrum guatemalense Standl. & Steyermark, sp. nov.—
 Herba vel frutex erectus 60 cm. altus ramosus, ramis teretibus brunneis dense stellato-hispidulis; stipulae filiformes 5–6 mm. longae; folia longipetiolata membranacea, petiolo gracili 1.5–4 cm. longo stellato-hispidulo; lamina rotundo-ovata usque elliptico-ovata vel late elliptica 4–7.5 cm. longa 2.5–6 cm. lata acuta, basi rotundata vel late obtusa, inaequaliter crenato-dentata, interdum subangulata, supra viridis pilis longis rigidiusculis pallidis simplicibus hispida, subtus paullo pallidior dense stellato-hispidula; inflorescentiae spicatae terminales multiflorae interruptae non densae, basi foliatae, floribus sessilibus vel breviter pedicellatis, bracteis linearibus inconspicuis deciduis, floribus interdum in axillis superioribus aggregatis; bracteolae lineares virides calycis lobis multo breviores; calyx 6 mm. longus vel in statu fructifero paullo longior densissime pilis simplicibus rigidiusculis hispidus et quoque stellato-hispidulus, ad medium vel profundius lobatus, lobis triangulari-ovatis acuminatis; petala pallide flava glabra 8–9 mm. longa; fructus carpella prope

apicem dense pubescentia, apice breviter bidentata, lateribus transverse rugulosis.—Guatemala: Dept. Santa Rosa: Wet thicket, near Cuilapa, alt. 900 meters, November 20–27, 1940, *Paul C. Standley* 78534 (type in Herb. Field Mus.); also no. 77661.

The relationship of this plant is obviously with *M. bicuspidatum* (Wats.) Rose, a Mexican species in which the leaves are stellate-pubescent on both surfaces, and the calyx is finely stellate-pubescent. It is irritating to have to describe as new an evidently weedy plant such as this, but it can scarcely be referred to *M. bicuspidatum*, and we find no other American species with close affinities.

MARCGRAVIACEAE

Ruyschia longistylis Standl. & Steyermark, sp. nov.—Frutex epiphyticus scandens omnino glaber, ramis crassis subteretibus ochraceis; folia breviter petiolata crasse coriacea, petiolo crasso ca. 5 mm. longo; lamina oblanceolato-oblonga 10–12 cm. longa 3–3.5 cm. lata supra medium latissima obtusa et mucronato-apiculata, basin obtusam vel subacutam versus sensim angustata, supra in sicco luteo-viridis, subtus paullo pallidior, nervis obsoletis; inflorescentia in statu fructifero 11 cm. longa subremote multiflora, rhachi fere 3 mm. crassa, pedicellis crassis 2.5–4 mm. longis patentibus vel leviter adscendentibus; bracteae ima basi calycis insertae semiglobosae vel obovatae 4 mm. longae obtusae basi angustatae et substipitatae, crassissimae; sepala valde inaequalia suborbicularia, interiora 3 mm. longa, apice rotundata, crassa, adpressa; fructus immaturus subglobosus 4 mm. longus, stylo crasso columnari 2.5 mm. longo.—Guatemala: Dept. Huehuetenango: Cafetal of Finca Soledad, 5 miles southeast of Barillas, Sierra de los Cuchumatanes, alt. 1,150 meters, July 26, 1942, *Julian A. Steyermark* 49545 (type in Herb. Field Mus.).

This is the only species of *Ruyschia* found thus far in northern Central America, but two or three others occur in southern Central America, and one has been described from Mexico. The present plant is noteworthy for the relatively much elongate style, that in other species being very short or obsolete.

Souroubea puberula Standl. & Steyermark, sp. nov.—Frutex epiphyticus scandens, praeter inflorescentiam omnino glaber, ramis crassis brunnescentibus vel ochraceis obtuse subangulatis; folia breviter petiolata subcoriacea, petiolo crasso 5–9 mm. longo; lamina oblanceolato-oblonga 8.5–12 cm. longa 3.5–4.8 cm. lata, apice obtusa vel obtusissima et mucronato-apiculata, supra medium

latissima, basin acutam vel attenuatam versus sensim angustata, nervis lateralibus tenerrimis obscuris; inflorescentia terminalis sessilis vel breviter pedunculata dense multiflora 7-8 cm. longa, omnibus partibus minute puberula, pedicellis vix ultra 2 mm. longis valde sursum curvis; bracteae ima basi calycis insertae pileiformes sessiles 3.5 mm. longae; sepala arcte imbricata suborbicularia 2.5 mm. longa apice rotundata.—Guatemala: Dept. Suchitepéquez: Upper forested slopes of barranco by Loma Grande, above Finca El Naranjo, Volcán de Santa Clara, alt. about 2,000 meters, June 2, 1942, Julian A. Steyermark 46862 (type in Herb. Field Mus.).

A close relative of this is the Guatemalan *S. micrantha* Standl. & Steyermark, but in that the pedicels are much longer and more slender, and the whole inflorescence is glabrous.

VIOLACEAE

Hybanthus sylvicola Standl. & Steyermark, sp. nov.—Frutex vel arbuscula 3-4.5 m. alta omnino glabra ramosa, ramis gracilibus lignosis subteretibus vel obtuse trigonis pallide viridibus; stipulae anguste ovatae vix ultra 1.5 mm. longae pallidae; folia breviter petiolata firme membranacea, petiolo 3-4 mm. longo; lamina oblongo-oblanceolata vel oblanceolata 8.5-10 cm. longa atque 2.5-3.5 cm. lata apice acuta vel breviter acuminata, basin versus sensim cuneato-attenuata, obsolete remoteque crenato-serrata vel subintegra, subtus pallidior; flores subfasciculati e gemmis axillaribus nascentes pauci, pedunculis fere filiformibus 5-8 mm. longis glaberrimis; sepala glabra inaequalia lanceolata vel late lanceolata ca. 2 mm. longa acuminata; petalum infimum 8 mm. longum, lamina rhombea longe unguiculata, ungue laminam fere aequante, petalis alteris unguem fere aequantibus; capsula ovoideo-globosa ca. 7 mm. alta et aequilata obtusissima vix rostrata glabra.—Guatemala: Dept. Alta Verapaz: Pila-pec, Finca Los Alpes, alt. 270 meters, March 20, 1939, C. L. Wilson 329 (type in Herb. Field Mus.).

Apparently a well-marked and somewhat isolated species, probably related to *H. elatus* (Turcz.) Morton. In that the capsules are much larger, the peduncles minutely but definitely puberulent, and the more acuminate leaves are very conspicuously and evenly serrulate almost throughout their length.

FLACOURTIACEAE

Xylosma celastrinum (HBK.) Standl. & Steyermark, comb. nov.
Flacourtia celastrina HBK. Nov. Gen. & Sp. 7: 239. 1825. *Myroxylon*

celastrinum Kuntze, Rev. Gen. 1: 44. 1891.—The Gray Herbarium Card Index of New Species includes a card crediting the combination *Xylosma celastrinum* to HBK. ex Clover, Madroño 4: 94. 1937, but apparently the combination never has been properly published. Kuntze (loc. cit.) attributed the name *Xylosma celastrinum* incorrectly to the HBK. citation listed above, and Clover listed the same name in a list of plant names, without any reference to a name-bringing synonym.

***Xylosma sessile* Standl. & Steyermark, sp. nov.**—Frutex glaber, ramis crassis ferrugineis vel brunneis lenticellis numerosis elevatis majusculis conspersis inermibus vel spinis crassis 1–2 cm. longis armatis, sat dense foliatis; folia modica brevissime petiolata vel fere sessilia coriacea, petiolo crasso vix ad 2 mm. longo vulgo breviore; lamina elliptico-oblonga vel lanceolato-oblonga 6.5–8.5 cm. longa 2–3 cm. lata vel paullo latior, acuta vel breviter acuminata, acumine ipso obtuso, basi cuneato-acuta, remote adpresso-serrata vel fere integra, supra viridis saepe lucida, nervis prominulis, venis obsoletis, subtus paullo pallidior, in sicco vulgo brunnescens, opaca, costa prominente, nervis lateralibus utroque latere ca. 6 prominulis, venis obsoletis vel obscuris; flores masculi in axillis dense fasciculati, pedicellis gracilibus 5–7 mm. longis glabris; sepala oblongo-ovata ca. 1.5 mm. longa obtusa glabra ciliata; stamina numerosa, filamentis crassiusculis glabris 2.5–3 mm. longis; bacca subglobosa 5–7 mm. diam. glabra; stylus brevissimus, stigmatibus brevibus ovatis.—Guatemala: Dept. Alta Verapaz: Cobán, January, 1907, *H. von Tuerckheim* II.1617 (type in Herb. Field Mus.). Region of Chelac, northeast of Carchá, April, 1939, *Standley* 70417, 70359, 70036. Dept. Izabal: Los Amates, February, 1908, *W. A. Kellerman* 7575.

Too many poor species already have been named in this genus, whose taxonomy is in a somewhat chaotic state and much in need of careful study. The specimens cited constitute a rather well-marked entity, apparently worthy of specific rank, and not associable with any of the published names of Central America and Mexico, so far as we are able to discover. The relationship is presumably with *X. flexuosum* (HBK.) Hemsl., a common species of Guatemala, but in that the veins always are elevated on both surfaces of the leaves and normally conspicuous and closely reticulate. The leaf shape of *X. sessile* is distinctive, unusually uniform in all the collections cited, and not matched by any of the numerous specimens of *X. flexuosum*.

Xylosma trinervium Standl. & Steyer., sp. nov.—Frutex ramosus gracilis 1.5–3 m. altus, ramis tortuosis teretibus brunneis, novellis dense pilis albidis patentibus mollibus pilosulis; folia inter minora crasse membranacea breviter petiolata, petiolo gracili 3–4 mm. longo dense pilosulo; lamina elliptica vel lanceolato-elliptica prope medianam latissima 4–5.5 cm. longa 2–2.8 cm. lata acuta vel acuminata, basi cuneato-acuta vel subobtusa e basi manifeste trinervia, grosse crenata vel crenato-serrulata, utrinque densissime pilis patentibus griseis velutino-pilosa, nervis lateralibus supra basin laminae ca. 4-jugis angulo semirecto vel angustiore adscendentibus valde obliquis; flores dioeci, masculis breviter racemosis, racemis subterminalibus solitariis subsessilibus dense paucifloris ca. 1 cm. longis, pedicellis pilosulis; sepala ovalia vel rotundata viridia paullo ultra 1 mm. longa apice rotundata patentia longiciliata dorso parce pilosula vel glabra; stamina 7–8 sepalis paullo longiora glabra.—Guatemala: Dept. Huehuetenango: Along Río Cuilco, between Cuilco and San Juan, alt. 1,200–1,300 meters, August 18, 1942, Julian A. Steyermark 50876 (type in Herb. Field Mus.).

A well-marked species, noteworthy for the very dense, soft pubescence of the leaves, which are conspicuously 3-nerved, and for the racemose inflorescence.

LOASACEAE

Eucnide guatemalensis Standl. & Steyer., sp. nov.—Herba ramosa, ramis crassis ubique dense viscido-hispida; folia longipetiolata herbacea, petiolo crasso 2.5–5.5 cm. longa densissime breviter viscido-hispido; lamina ambitu rotundata vel ovato-rotundata 5–9 cm. longa 4.5–8.5 cm. lata basi profunde anguste cordata, breviter 5–9-loba, lobis rotundatis undulatis vel undulato-dentatis, utrinque sat dense hispida; flores numerosi, pedunculis crassis 3–6 cm. longis dense viscido-hispida; hypanthium obconicum vel late turbinatum 9 mm. longum 10–12 mm. apice latum dense pilis longis patentibus hispidum; sepala oblongo-linearia vel anguste lanceolata 3–3.5 cm. longa 5–7 mm. lata longiacuminata extus viscido-hispida; petala ca. 5.5 cm. longa et fere 2 cm. lata apice rotundata, albido-viridescentia, extus sparse pilis longis mollibus albis pilosa vel fere omnino glabra; stamina numerosissima petalis bene longiora ca. 7 cm. longa, antheris 1.5 mm. longis et aequilatis; capsula (perfecta non visa) ca. 1.5 cm. longa.—Guatemala: Dept. Huehuetenango: On vertical bluffs, northwest of Cuilco, two-thirds the way up

Cerro Chiquihui, above Carrizal, alt. about 2,000 meters, August 17, 1942, Julian A. Steyermark 50818 (type in Herb. Field Mus.).

One other species of *Eucnide* is known from Guatemala, the small-flowered *E. bartonioides* Zucc., which has been collected there but once, but is rather frequent in Mexico. In the size of its flowers this new species approaches *E. grandiflora* Rose of southern Mexico but that has still larger flowers, with petals fully 7 cm. long, and the petals are acute or subacute, rather than rounded at the apex.

LENTIBULARIACEAE

***Pinguicula clivorum* Standl. & Steyermark, sp. nov.**—*Folia numerosa rosulata ad terram adpressa obovato-rotundata pallide viridia in sicco tenuia 18–25 mm. longa 20–22 mm. lata, apice late rotundata, basi late cuneato-angustata, sessilia, glabra vel supra pilis paucis laxis conspersa, ciliata, obscure puncticulata; scapi gracillimi fere filiformes 5–7 cm. longi ut videtur adscendentibus vel decumbentes breviter densiusculi pilosuli; calyx ca. 2.5 mm. longus sparse glanduloso-pilosulus, lobis valde inaequalibus ovalibus vel ovali-ovatis apice obtusissimis vel rotundatis, glanduloso-ciliolatis; corolla pallide lilacina vel albescens 12 mm. longa glabra, labio majore profunde trilobo, lobis rhomboidibus vel late obovatis apice rotundatis, labio minore duplo breviore profunde 2-lobo, calcare 6 mm. longo gracillimo apice subsaccato recto.*—Guatemala: Dept. Huehuetenango: On high bluffs in upper reaches of a barranco above San Juan Ixcoy, Sierra de los Cuchumatanes, alt. 2,400 meters, August 4, 1942, Julian A. Steyermark 50061 (type in Herb. Field Mus.).

Local name “Flor de piedra.” Leaves very pale green and thin, the margins inrolled and uprolled; corolla with a pale green spur, paler at the base and in the upper two lobes, the remaining parts whitish; a narrow green crest down the middle lobe. Two other species of *Pinguicula* are known from Central America, *P. moranensis* HBK. with very large, violet or deep purple corollas, and *P. crenatiloba* DC., with small white corollas. In flower characters this plant is somewhat intermediate between these two. The leaves are very large compared with those of *P. crenatiloba*, and similar in size to those of *P. moranensis*, which has very thick and fleshy leaves, quite unlike the very thin ones of this new species.

***Utricularia adenantha* Standl., sp. nov.**—*U. adenantha* Standl. Field Mus. Bot. 12: 366. 1936, nomen. Subgenus *Calpidisca*. Herba

erecta terrestris; folia radicalia pauca subcarnosa obovata vel spathulata glabra; lamina 3-4 mm. longa apice rotundata, basi in petiolum aequilongum sensim angustata; scapi 10-15 cm. alti tenerrimi fere filiformes glabri, nudi vel infra flores bracteis minutis 1-2 remotis onusti, 2-4-flori, parte florifera geniculata; pedicelli filiformes 3-6 mm. longi; bracteae lanceolato-subulatae sessiles ca. 0.6 mm. longae subulato-acuminatae, bracteolis conformibus sed duplo brevioribus; calycis lobi ovati obtusi vel subacuti dense minuteque glanduloso-puberuli; flores parvi albi, corolla extus ubique minute glanduloso-pubescente, limbo paullo ultra 2 mm. lato; calcar 2 mm. longum extus glanduloso-pubescentis apice subulatum, orem versus sensim dilatatum. British Honduras: In swampy places, at sea level, growing in sandy soil, "very rare," September 2, in flower, *William A. Schipp* S-89 (type in Herb. Field Mus.).

From all the thirteen other species of *Utricularia* known from British Honduras and Guatemala this plant is distinguished at once by its pubescent flowers, which are the smallest produced by any local member of the genus.

MELASTOMACEAE

Utricularia echinoidea Standl. & Steyermark, sp. nov.—Frutex 1.5 m. alt. Ramis gracilibus teretibus densissime hirsuto-tomentosis, pilis patentibus setiformibus pallide lutescentibus apice dense breviterstellato-ramosis, petiolis paniculisque similiter indutis, ramis vetustioribus brunneis; petioli crassiusculi 1-4 cm. longi; lamina anguste ovata vel lanceolato-ovata 11-17 cm. longa 4-7.5 cm. lata longe anguste acuminata, basi rotundata vel obtusa, 5- plinervia, nervis interioribus bene supra basin laminae nascentibus, minute serrulata vel subintegra, supra densissime pilis brevibus lutescentibus subpatentibus setoso-hirsuta, subtus lutescenti-viridis dense pilis mollibus breviter stipitatisstellato-tomentosa; panicula parva erecta pedunculata vix ultra 4 cm. longa angusta, ramis brevibus oppositis crassis divaricatis, floribus 5-meris ad apices ramulorum dense aggregatis; hypanthium campanulatum 2.5 mm. longum basi obtusum, densissime setulis crassis pallide lutescentibus inferne sensim incrassatis apice breviterstellato-ramosis indutum; calycis tubus brevissime productus, sepalis 5 ovato-rotundatis extus setulosis, lobis exterioribus subulatis vel subulato-triangularibus 1.6 mm. longis suberectis sepalis multo longioribus; petala alba glabra ovali- obovata 3.5-4 mm. longa reflexa apice rotundata vel obtusissima; filamenta gracillima glabra 4 mm. longa; antherae inaequales subu-

latae, *longiores* 3 mm. *longae*, *breviores* 2 mm. *longae*; stylus *crassiusculus* 7 mm. *longus* prope basin *sparse pilosulus*, *stigmate punctiformi*.—Guatemala: Dept. Huehuetenango: Vicinity of Maxbal, about seventeen miles north of Barillas, Sierra de los Cuchumatanes, alt. 1,500 meters, July 15–16, 1942, Julian A. Steyermark 48831 (type in Herb. Field Mus.).

This and *M. tixicensis*, although quite distinct species, are evidently closely related, and of somewhat uncertain position. The calyx and hypanthium in both are very densely covered with short stout spreading yellowish hairs, which are very finely stellate-branched at the tips, so very densely so that the calyx resembles a small bur. We have not observed such an indument on the calyx (and hypanthium) in any other Central American species of *Miconia*. The much elongate outer calyx lobes found in both species would place the species in *Heterotrichum*, a genus of somewhat dubious standing, but all the species of *Heterotrichum* of which we have examined material are quite uniform in general appearance, and very unlike these two Guatemalan species, which in general aspect are much like many other *Miconia* species.

***Miconia tixicensis* Standl. & Steyermark, sp. nov.**—*Frigidum* 1.5–2.5 m. altus, ramis gracilibus densissime stellato-tomentosus, pilis pro parte parvis sessilibus, pro parte inferne incrassatis elongatis patentibus et apice breviter stellato-ramosis, tomento brunnescente, petiolis et inflorescentiis similiter indutis; folia subaequalia membranacea graciliter petiolata, petiolo 1–2 cm. longo; lamina lanceolata vel anguste lanceolata 8–12.5 cm. longa 2–3 cm. lata, longe anguste attenuato-acuminata basin acutam versus sensim angustata, supra viridis minute denseque scaberula, subtus glaucescens ubique dense minute pilis sessilibus stellato-puberula, 3–5-plinervia, nervis exterioribus obscuris et submarginalibus, interioribus alte supra basin laminae nascentibus; inflorescentia terminalis breviter pedunculata pauciflora 2.5 cm. longa, ramis paucis crassis patentibus, floribus 5-meris ad apices ramulorum aggregatis; hypanthium in statu fructifero subglobosum 5 mm. longum, densissime echinulato-setulosum, pilis pallidis rigidis inferne incrassatis apice breviter stellato-ramosis; lobi exteriore calycis subulati erecti 2.5 mm. longi densissime ut hypanthium induti.—Guatemala: Dept. Chiquimula: Cerro Tixixí, three to five miles north of Jocotán, in cloud forest, alt. 1,500 meters, November 10, 1939, Julian A. Steyermark 31585 (type in Herb. Field Mus.).

Both this and *M. echinoidea* are represented, unfortunately, only by rather scant and incomplete material, but both are clearly distinct from any other melastomes known from Guatemala and it is desirable to have names for them. Additional material, if obtainable, will show that they are exceptionally distinct species, although there is always the possibility that they have been described from South America. In few groups of tropical American plants having large numbers of species do the species show such extreme instances of discontinuous distribution as in the Melastomaceae, so that the possibility of identifying these two plants with South American species is a very real one.

COMPOSITAE

***Eupatorium crocodilium* Standl. & Steyermark, sp. nov.**—Herba perennis erecta usque ad 60 cm. alta, caulis solitariis vel pluribus simplicibus vel sparse ramosis subteretibus, superne sparse minute puberulis vel strigillosis, inferne fere glabris, multifoliatis; folia opposita saepe in axillis fasciculis foliorum reductorum comitata, graciliter petiolata, firme membranacea, petiolo 1 cm. longo vel breviore glabro; lamina rhombico-ovata vel oblongo-ovata 2-3 cm. longa 1-1.5 cm. lata, apicem obtusum versus angustata, basi acuta vel late cuneata, 3-nervia, remote obscureque crenata, utrinque glabra; inflorescentia parva fastigiato-trichotoma terminalis longipedunculata, capitulis cymoso-fastigiatis, cymulis 1-3 densis 1.5-2 cm. latis; capitula campanulata lilacina 5 mm. longa, pedicellis usque ad 4 mm. longis crassiusculis minute puberulis vel strigillosis; phyllaria ca. 3-seriata purpurascentia vel viridia, interioribus linearioribus oblongis, apice rotundatis vel obtusissimis et minute apiculatis, minute puberula vel glabrata ciliolata, extimis brevissimis oblongis vel ovato-oblongis obtusis vel subacutis; flores ca. 15, corollis glabris 2.3 mm. longis; achaenia glabra nigra 4-angulata paullo ultra 1 mm. longa; pappi setae numerosae scaberulae albae 2.5 mm. longae.—Guatemala: Dept. Huehuetenango: Swampy places in large valley, Ciénaga de Lagartero, below Miramar, alt. 300 meters, August 29, 1942, Julian A. Steyermark 51498 (type in Herb. Field Mus.).

Here may belong also Steyermark 38478, collected near Cristina, Izabal. The plant is one of mediocre appearance for the genus, and is evidently related to the very common *E. pycnocephalum* Less., one of the most widespread species of Central America. From all its not very numerous forms that differs in having broad-based leaves with abundant pubescence.

Eupatorium cupressorum Standl. & Steyermark, sp. nov.—
Frutex, ramis plus minusve recurvis teretibus striatis brunnescentsibus sat dense villoso-tomentulosis; folia opposita breviter petiolata firme membranacea, petiolo usque ad 12 mm. longo dense breviter villoso; lamina ovata, oblongo-ovata vel lanceolato-oblonga, majores ca. 16 cm. longae atque 11 cm. latae, superiores angustiores, longissime attenuato-acuminata, basi breviter cordata vel late rotundata, 3-nervia, remote serrato-dentata vel repando-denticulata, supra sparse villosula vel puberula tactu asperula, venulis prominentibus et minute reticulatis, subtus paullo pallidior ad nervos venasque villosula, nervis venisque valde prominentibus, venulis prominentibus et arctissime reticulatis; inflorescentia thyrsoidaea foliata ca. 22 cm. longa et 9 cm. lata, capitulis numerosis majusculis albis cymosis, cymulis paucicapitulatis racemosis, pedicellis crassis 4–8 mm. longis dense tomentulosis, bracteis bracteolatisque plerumque linearibus vel subulatis saepe recurvis; capitula fere 1 cm. longa campanulata; phyllaria 2–3-seriata lanceolato-linearia, extima paullo breviora, omnia acuta sat dense pubescentia striata pallida; flores 40 vel ultra, corolla glabra filiformi-tubulosa involucrum duplo excedente; achaenia immatura 4-angulata pallida 2 mm. longa ad angulos hispidula, pappi setis rigidulis lutescenti-albis scaberulis corolla paullo brevioribus.—Guatemala: Dept. Totonicapán: Moist *Cupressus* forest, along road between San Francisco El Alto and Momostenango, alt. 2,220–3,000 meters, January 19, 1941, *Paul C. Standley* 84001 (type in Herb. Field Mus.).

A well-marked species of distinctive appearance, not closely related to any other with which we are familiar. It is noteworthy for the long narrow thyrsiform inflorescence and for the large short-petiolate leaves which have three conspicuous nerves that are continued to the apex of the blade.

Eupatorium jejunum Standl. & Steyermark, sp. nov.—Annua erecta gracillima 13–50 cm. alta simplex vel laxe pauciramosa, caule tereti pallide viridescente dense minute puberulo; folia parva tenuiter membranacea graciliter longipetiolata laete viridia, petiolo 1–2.5 mm. longo puberulo; lamina ovata, rhombico-ovata vel deltoideo-ovata 2.5–4 cm. longa 2–4 cm. lata acuta vel acuminata, basi truncata vel late rotundata, interdum subcordata, 3-nervia, grosse et aequilater crenato-dentata, supra sparsissime pilis brevibus albidis patentibus villosula vel fere glabra, subtus ad nervos venasque plus minusve puberula; capitula lilacina parva numerosa cymosa, paniculam magnam laxissimam efformantia, graciliter longipedicellata, pedicel-

lis 1 cm. longis vel brevioribus puberulis lineari-bracteolatis; involucrum fere 3 mm. longum campanulatum; phyllaria aequalia vel subaequalia pallide viridia linearia acuta costulata glabra; flores ca. 40 phyllariis aequilongi; corollae glabrae 1.5 mm. longae; achaenia angusta nigra 1 mm. longa glabra; pappi setae albae paucae deciduae. —Guatemala: Dept. Jutiapa: Damp thicket, El Barrial, east of Jutiapa, alt. about 800 meters, October 30, 1940, *Paul C. Standley* 75788 (type in Herb. Field Mus.). Between Jutiapa and Las Tunas, 850–900 meters, *Standley* 76260. Vicinity of Jutiapa, 850 meters, *Standley* 75299. Dept. Chiquimula: Shaded slopes of cañada along Río Playa, near Concepción de las Minas, 1,200–1,700 meters, *Steyermark* 30869. Moist rocky slopes at base of waterfall, Socorro Mountain, near Concepción de las Minas, 1,200–1,790 meters, *Steyermark* 30892. Dept. Santa Rosa: Rinconcito, 1,200 meters, *Heyde & Lux* 4206. Near Cuilapa, 895 meters, *Standley* 77714.

A small and rather delicate plant, doubtless to be found only during the wetter months and withering as soon as the rains cease. Its closest relatives are not obvious. In general appearance it suggests *E. Sinclairii* Benth. (with which the Heyde and Lux collection was confused) and *E. microstemon* Cass., but in both those species the involucre is imbricate, while in this new species the phyllaries are all equal or nearly so in length.

***Eupatorium macrum* Standl. & Steyermark, sp. nov.**—Herbacea vel fruticosa ramosa, ramis gracilibus pallidis teretibus dense breviterque pilosis; folia opposita tenuiter membranacea petiolata, petiolo gracillimo 1–2.5 cm. longo minute piloso; lamina trianguli-lanceolata vel anguste rhombico-lanceolata 3.5–8.5 cm. longa 1.5–3.5 cm. longa, longe anguste attenuato-acuminata, apice ipso obtuso, basi acuta vel attenuata et ad petiolum longe decurrentis, inconspicue undulato-dentata vel fere omnino integra, bene supra basin laminae 3-plinervia, supra viridis sparse minute puberula, subtus paulo pallidior densiuscule crispoo-pubescentia; inflorescentia laxe paniculata foliata, internodiis valde elongatis, ramis dichotomis gracillimis, capitulis sessilibus paucis ad apices ramulorum pauci-aggregatis, fasciculis pro parte sessilibus, pro parte pedunculatis; capitula cylindracea alba 6 mm. longa 5-flora; phyllaria inaequalia ca. 3-seriata straminea vel pallide viridescentia, interiora lineari-oblunga apice rotundata vel obtusa et tenuia obscure costulata sublucida, exteriora pauca brevissima oblongo-ovata acuta glabra ciliolata; corollae glabrae phyllariis vix longiores; achaenia nigrescentia 1.5 mm. longa dense sursum scaberula, pappi setis albis scaberulis

corollam fere aequantibus.—Guatemala: Dept. Chiquimula: Rocky banks, base of Cerro Colorado, along Río Jocotán, near Jocotán, alt. 400 meters, November 9, 1939, Julian A. Steyermark 31534 (type in Herb. Field Mus.).—Honduras: San Pedro Sula, 180–450 meters, May, 1888, C. Thieme 5334b.

Apparently referable to the section *Cylindrocephala*, and of the relationship of *E. Lozanoanum* Robinson, although not closely related to that species, in which the glabrous leaves are rounded at the base. In *E. Lozanoanum* the axis of the inflorescence is continuous, while in *E. macrum* it is repeatedly dichotomous, with a small cluster of heads in each fork of the branches. The Honduras specimen apparently was seen by Dr. Robinson, who failed to recognize it as new, doubtless because the specimen is in poor condition.

Eupatorium mendax Standl. & Steyerm., sp. nov.—Herbacea vel suffruticosa subscandens, ramis gracillimis viridescentibus teretibus glabris, internodiis elongatis; folia graciliter longipetiolata membranacea opposita, petiolo 1.5–2.5 cm. longo glabro; lamina ovata vel elliptico-ovata 5–7 cm. longa 2–4 cm. lata longiacuminata vel caudato-acuminata, basi obtusa vel rotundata, 3-nervia, grosse remoteque serrato-dentata, infra medium vulgo integra, supra viridis glabra sublucida, subitus concolor ad nervos pilis paucis albis inconspicuis conspersa; inflorescentia thyrsideo-paniculata 10 cm. longa foliata, bracteis bracteolisque brevibus linearibus vel fere subulatis, ramis dense laxeque lutescenti-tomentulosis, pedicellis gracillimis tomentulosis usque 5 mm. longis; capitula numerosa subdense congesta 7 mm. longa 5-flora viridescenti-alba; involucrum fere cylindraceum, phyllaris ca. 3-seriatis, interioribus oblongo-linearibus pallide viridescentibus obtusis costulatis glabris sublucidis, extimus brevibus ovato-oblongis obtusis ciliatis; corollae glabrae involucro breviores; achaenia brevia glabra, pappi setis rigidulis lutescenti-albis.—Guatemala: Dept. San Marcos: Slopes of barrancos along Río Vega, between San Rafael and the Mexican border, Volcán de Tacaná, alt. 2,500–3,000 meters, February 21, 1940, Julian A. Steyermark 36341 (type in Herb. Field Mus.).

Although the heads in this species are more or less cylindric and suggestive of the section *Cylindrocephala*, the relationship is evidently with *E. leucocephalum* Benth., a very common plant of the Guatemalan mountains. In that, however, the leaves are relatively much narrower and 3-plinerved and the involucres are almost pure white, rather than pale green.

Eupatorium mimicum Standl. & Steyerm., sp. nov.—Frutex gracilis erectus ramosus 1-2.5 m. altus, ramis gracilibus teretibus brunnescensibus vel viridescentibus dense pilis fulvidis vel purpurascensibus villosulis vel incurvo-puberulis; folia opposita graciliter petiolata membranacea, petiolo 1.5-4.5 cm. longo dense tomentuloso; lamina deltoidea, rhombico-deltoidea vel ovato-deltoidea 3.5-8 cm. longa 2-5 cm. lata acuminata vel longiacuminata, basi truncata vel late rotundata 3-nervia, grosse inaequaliter crenata vel crenato-dentata, supra viridis sparse pilis pallidis crassis plurilocularibus villosula, subtus fere concolor ad nervos tomentulosa, ad nervos venasque vulgo sparse villosula minute glanduloso-puncticulata; inflorescentiae terminales cymoso-paniculatae vel subthyrsoidae foliatae vix ultra 6 cm. longae, bracteis linearibus vel fere subulatis paucis, capitulis paucis vel numerosis laxe cymoso-aggregatis, pedicellis gracilibus elongatis dense puberulis vel tomentulosis; capitula albida vel viridi-lutescentia 7-8 mm. longa ca. 8-flora; involucrum anguste campanulatum floribus duplo brevius, phyllariis subaequalibus ca. 2-seriatis laxe imbricatis lanceolato-linearibus acutis vel longe acuminatis viridescentibus costulatis dense puberulis et minute glanduloso-puncticulatis; corolla tubulosa 4 mm. longa glabra pappo paullo brevior; achaenia nigra angusta 3 mm. longa dense minute hispidula; pappi setae lutescentes numerosae scaberulae.—Guatemala: Dept. Quezaltenango: Damp thicket, region of Las Nubes, south of San Martín Chile Verde, alt. about 2,250 meters, on white-sand mountain side, January 27, 1941, *Paul C. Standley* 85146 (type in Herb. Field Mus.); also no. 83662. Region of Boxantín, southeast of San Martín Chile Verde, 2,400 meters, *Standley* 83728. Damp dense forest, La Shuya, southwest of San Martín Chile Verde, 1,620 meters, *Standley* 67867. Slopes of Volcán de Zunil near Aguas Amargas, 2,450-2,850 meters, *Standley* 65439. Aguas Amargas, 2,450 meters, *Standley* 83329. Dept. San Marcos: Río Vega, Volcán de Tacaná, 2,500-3,000 meters, *Steyermark* 36360. Between Tajumulco and Tecutla, 1,800-2,500 meters, Volcán de Tajumulco, *Steyermark* 36815.

This is a close ally of *E. Coulteri* Robinson, also Guatemalan, but apparently this is a distinct species, and the two have different ranges inside Guatemala. *E. Coulteri* differs from the present plant in having smaller heads, and leaves puberulent or scaberulous on the upper surface or nearly glabrous, rather than sparsely villosulous.

Eupatorium plethadenium Standl. & Steyerm., sp. nov.—Frutex vel arbustula 1-9-metralis, sat dense ramosa, ramis crassis

6-angulatis brunnescentibus vel fuscis, novellis sparse minute adpresso-tomentulosis vel fere omnino glabris; folia opposita in sicco subcordiacea petiolata, petiolo crasso 7–18 mm. longo glabro vel glabratu; lamina lanceolato-oblonga vel anguste elliptico-oblonga 7–13 cm. longa 3–5 cm. lata acuminata vel acuta, basi acuta vel acuminata, ima basi saepe late revoluta, penninervia, remote adpresso-serrata vel subintegra, in sicco saepe nigrescens, supra lucida glabra, nervis venisque non elevatis, subtus paullo pallidior glabra, saepius plus minusve nigro-puncticulata; inflorescentia dense multicapitata corymbosa convexa vel rotundata foliis vix longior 8–10 cm. lata fastigiato-ramosa, ramis pedicellisque ubique dense glanduloso-atomiferis vel minute puberulis, interdum glabratis, pedicellis crassiusculis vel gracilibus usque ad 7 mm. longis, bracteis bracteolisque conspicuis numerosis linearibus vel subulatis; capitula anguste campanulata 8–10 mm. longa purpureo-rosea ca. 8-flora; phyllaria ca. 6 mm. longa pauca subinaequalia, interiora linearior-oblonga apice rotundata purpurascens subvernica et interdum obscure sparse puberula, extima 1–3 brevissima linearia vel lanceolato-oblonga, omnia laxe adpressa floribus plus quam duplo breviora; corollae tubulosae 7 mm. longae glabrae pappo paullo longiores; achaenia fere nigra 3.5 mm. longa glabra vel obscure minuteque puberula 4-angulata; pappi setae pallide purpurascentes 6 mm. longae inaequales leviter scaberulae. ... Guatemala: Dept. Chimaltenango: In *Cupressus* forest, region of Santa Elena, Cerro de Tecpám, alt. 2,400–2,700 meters, December 26, 1938, *Paul C. Standley* 61100 (type in Herb. Field Mus.); same locality, *J. R. Johnston* 433, *Standley* 60935, 58671. Dept. Sololá: Volcán de Tolimán, 2,700–3,100 meters, *Steyermark* 47598. Dept. Huehuetenango: El Mirador, at summit of road leading from Huehuetenango to Sierra de los Cuchumatanes, 3,300 meters, *Standley* 81884. Above Macx, between Todos Santos and San Martín, 2,500–3,000 meters, *Steyermark* 51923. Above San Juan Ixcoy, Sierra de los Cuchumatanes, 2,400 meters, *Steyermark* 49983. Between Tojquiá and Caxín bluff, Sierra de los Cuchumatanes, 3,700 meters, *Steyermark* 50174. Between San Mateo Ixtatán and Santa Eulalia, 2,800–3,100 meters, *Steyermark* 49932.

In his work upon the genus *Eupatorium* Dr. Robinson perhaps would have treated this as only a variety of *E. ligustrinum* DC., but to us it appears to be a perfectly distinct local species, of rather abundant occurrence in the high mountains of central and north-western Guatemala. It is uniformly distinct from all forms of *E. ligustrinum*, as that is represented so abundantly in Mexico and

Central America, in the greatly reduced pubescence of the inflorescences, which consists of dense, sessile or nearly sessile glands. The heads, too, are larger than in all or most forms of that species and the leaves, remarkably uniform in all our specimens, have a somewhat distinctive outline, dentation, and general appearance. It may be remarked here that none of the Central American collections of this group agree with the type specimen of *E. ligustrinum*, which has obtuse and practically or quite entire leaves. The Guatemalan plant was described as *E. semialatum* Benth., from Zunil, but it was reduced, apparently properly, to synonymy under *E. ligustrinum*.

Eupatorium Rojasianum Standl. & Steyerm., sp. nov.—*Herba metralis vel paulo humilior perennis gracilis ramosa, ramis teretibus viridescentibus minutissime sparseque puberulis vel fere glabris striatis; folia opposita graciliter petiolata membranacea, petiolo 2–5.5 cm. longo glabro; lamina deltoideo-ovata 3.5–7 cm. longa 1.5–4.5 cm. lata, longe anguste attenuato-acuminata, basi subtruncata usque rotundo-cuneata, 3-nervia, arcte atque aequaliter serrato-dentata, supra viridis fere glabra, subtus paulo pallidior fere glabra vel ad nervos vix puberula; capitula alba pauca vel numerosa 5-flora graciliter pedicellata in cymas parvas ramulos laterales terminantes aggregata, cymulis laxe paniculatis, pedicellis sparse minute pilosulis; involucrum cylindraceum 5 mm. longum, phyllariis pallide viridescentibus ca. 3-seriatis, interioribus anguste oblongis erectis apice rotundatis et subscariosis glabris, extimis brevibus adpressis ovali-ovatis obtusis; corollae glabrae graciliter tubulosae 2.5 mm. longae, fauce vix dilatato; achaenia nigra 1.6 mm. longa glabra, pappi setis albis corollam aequantibus.*—Guatemala: Dept. Quezaltenango: Damp thicket, near El Muro, below Santa María de Jesús, alt. about 1,200 meters, March 1, 1939, *Paul C. Standley* 67221 (type in Herb. Field Mus.).

This, also, is apparently referable to section *Cylindrocephala*, and related to *E. macrum*, described on a preceding page. That has 3-plinerved, very pubescent leaves rather than 3-nerved, almost glabrous ones. The species is named for Professor Ulises Rojas, Director of the Jardín Botánico of Guatemala.

Eupatorium salinum Standl. & Steyerm., sp. nov.—*Frutex ramosus, ramis viridescentibus teretibus dense puberulis, ramulis fere rectangule divaricatis; folia inter minora longipetiolata membranacea opposita, petiolo 8–13 mm. longo dense puberulo vel breviter villosulo; lamina late triangulari-ovata 3–4.5 cm. longa*

2-3.5 cm. lata apicem obtusum versus paullo angustata, basi fere truncata vel saepius late cuneata atque abrupte contracta, 3-nervia, grosse et saepius duplo crenata, utrinque dense pilis subadpressis griseo-pilosula vel villosula; inflorescentia laxe paniculata foliata, capitulis dense cymosulis paucis breviter pedicellatis, cymulis ramulos longos fere nudos laterales terminantibus, pedicellis densissime albido-vilosulis; capitula campanulata lilacina 6 mm. longa ca. 50-flora; phyllaria subaequalia linearia, interiora cuspidato-acuminata, exteriora longiattenuata, viridescentia, dense puberula flores fere aequantia; corollae graciles anguste tubulosae fere glabrae sed ad basin dentium sparse pubescentes setis pappi subaequiloniae; achaenia angusta nigra glabra 1.6 mm. longa, pappi setis lutescenti-albis.—Guatemala: Dept. Jutiapa: In shade of bushes in salt flat, dry plateau in chaparral between railroad station of Mita and town of Asunción Mita, alt. 650 meters, November 13, 1939, Julian A. Steyermark 31775 (type in Herb. Field Mus.).

In general appearance as well as in most of its detailed characters this plant is much like *E. azureum* DC. of northeastern Mexico.

Eupatorium saxorum Standl. & Steyermark, sp. nov.—Herba perennis erecta ca. 20 cm. alta, caulis pluribus simplicibus vel sparse ramosis sparsissime breviter pilosulis vel fere glabris teretibus brunnescensibus vel purpurascensibus, inferne sat dense foliatis; folia parva opposita breviter petiolata crasse membranacea, petiolo crassiusculo 3-5 mm. longo sparse pubescente vel fere glabro; lamina ovata, deltoideo-ovata vel oblongo-ovata 1-2 cm. longa 6-15 mm. lata, apicem obtusum versus angustata, basi rotundata, 3-nervia, inconspicue crenato-serrata vel fere integra, supra viridis minute scaberula vel glabrata, subtus fere concolor ad nervos venasque strigosa vel fere glabra; capitula pauca ca. 6 mm. longa longe graciliter pedicellata ad apices caulinum cymoso-fasciculata ca. 15-flora, inflorescentiis simplicibus vel e cymulis 3 longipedunculatis compositis, bracteis linearibus vel subulatis paucis; phyllaria pauca lanceolato-linearia viridia acuta vel acuminata 2-3-costulata glabra vel glabrata ciliolata floribus multo breviora; corollae graciles glabrae 3 mm. longae albae; achaenia nigrescentia 2 mm. longa ad angulos hispidula, pappi setis albidis vel pallide purpurascensibus corolla paullo brevioribus scaberulis.—Guatemala: Dept. San Marcos: Dry shaded rocky slopes, between Sibinal and summit of Volcán de Tacaná, alt. 2,500-4,000 meters, February 19, 1940, Julian A. Steyermark 36075 (type in Herb. Field Mus.). Dept. Huehuetenango: Open limestone *Juniperus* forest, Sierra de los Cuchumatanes,

along road beyond La Pradera, km. 32, about 3,300 meters, December 31, 1940, *Standley* 81808.

In general appearance this plant looks like a reduced form of *E. pycnocephalum* Less. but in that the involucre is several-seriate rather than having the phyllaries all subequal in length. Its affinities may be rather with *E. pazcuarensis* HBK. of Mexico and Guatemala, but that is quite different in general appearance, being a large coarse plant with large leaves and very numerous heads.

***Eupatorium vetularum* Standl. & Steyermark, sp. nov.**—Frutex 2-3-metralis ramosus, ramis crassis teretibus striatis brunneis, novellis dense pilis brunneis plurilocularibus simplicibus vel glanduliferis villosa-tomentosis; folia opposita in sicco subcoriacea petiolata, petiolo crasso 15-18 mm. longo brunneo-tomentoso; lamina elliptico-oblunga vel ovato-oblunga 8-11 cm. longa 3-4.5 cm. lata acuta, basi acuta et saepe obliqua, penninervia, grosse serrata vel dentata, supra viridis puberula vel sparse breviter villosula tactu asperula, nervis venisque inconspicuis, subtus pallidior ubique sparse villosula, ad costam stipitato-glandulosa, epunctata vel obscure et minutissime puncticulata; inflorescentia corymbosa dense multicapitata convexa interdum 13 cm. lata, ramis fastigiatis dense villosulis et glanduloso-pilosus, bracteis bracteolisque conspicuis linearibus vel subulatis, pedicellis brevibus vel elongatis rectis crassiulus; capitula 10-12 mm. longa ca. 15-flora pallide rosea turbinato-campanulata; involucrum ca. 7 mm. longum floribus fere duplo brevius, phyllariis subaequalibus vel paulo inaequalibus lanceolato-linearibus subadpressis attenuato-acutis dense stipitato-glanduliferis et minute villosulis; corolla anguste tubulosa glabra 7 mm. longa pappo paulo vel vix longior; achaenia tenuia fusca 3 mm. longa dense glanduloso-atomifera; pappi setae longae pallide purpurascentes. —Guatemala: Dept. Totonicapán: Low damp thicket, common, region of Chiu Jolóm, mountains above Totonicapán, on the road to Desconsuelo, alt. 2,800-3,100 meters, January 23, 1941, *Paul C. Standley* 84404 (type in Herb. Field Mus.). Dept. Quetzaltenango: Volcán de Santo Tomás, 2,500-3,700 meters, *Steyermark* 34823 (sterile but probably referable here). Dept. Chimaltenango: Dense *Cupressus* forest, Cerro de Tecpám, region of Santa Elena, 2,700 meters, *Standley* 58714.

The relationship of this is with *E. ligustrinum* DC., a common species of the Guatemalan mountains. In that the heads and involucres are very much shorter than in *E. vetularum* and the heads have less numerous flowers. The description of *E. Caeciliae* Robin-

son, based upon a plant from this same region, suggests the present plant but unless the description is very inaccurate, which is not likely to be the case, the two plants are quite different. *Eupatorium vetularum* is dedicated to the shepherdesses that one often sees along this stretch of the International Highway of Guatemala, a dreary region, cold, bleak, and swept by perpetual wind, fog, and driving rain. These old women probably are kindly and quite ordinary by nature but in appearance they are most forbidding as well as unbelievably picturesque. All day long they tend their sheep, seated on some cold wet bank, swathed in long black flowing garments of funereal aspect, each of the old crones wearing a wide-brimmed black hat with a narrow tall peaked crown, just like the conventional witches pictured in children's story books. They are one of a great number of improbable and almost unbelievable things to be seen in Guatemala, away from tourist-infested routes.

***Eupatorium zunilanum* Standl. & Steyermark, sp. nov.**—*Suf-*
frutescens 60–90 cm. *alta* *sparse* *laxeque ramosa*, *caulibus teretibus*
viridescentibus *dense pilis longis patentibus albidis glanduliferis*
villosis, *internodiis elongatis*; *folia opposita longissime petiolata*
membranacea, *petiolo gracili* 2.5–6.5 cm. *longo glanduloso-villoso*
saepe lamina longiore; *lamina deltoidea vel ovato-deltoida* 4–7.5
cm. *longa* 3–6 cm. *lata* *acuta* *vel acuminata*, *basi truncata*, 3-*nervia*,
grosse et fere aequaliter crenata, *supra sparse pilosa* *vel villoso*,
subtus fere concolor *ubique sparse villoso*; *inflorescentia corymbi-*
formis laxa sparse ramosa ca. 12 cm. *alta* *et aequilata*, *ramis elon-*
gatis, *capitulis longipedicellatis laxe cymosis*, *pedicellis plerumque*
1–2 cm. *longis sat dense glanduloso-pilosis*; *capitula pauca alba*
10–12 mm. *longa campanulata* 30–35-flora; *phyllaria subaequalia*
pallide viridescentia *late linearia*, *acuta et superne scariosa* *dense*
glanduloso-pubescentia, *interdum purpurascens*, *costulata*; *corollae*
glabrae 5–6 mm. *longae involucro* *vix longiores*, *fauce sensim dilata-*
tato; *achaenia nigra* *crassiuscula minutissime puberula* *vel fere*
glabra, *pappi setis albis paucis minute scaberulis* *deciduis*.—*Guate-*
mala: *Dept. Quezaltenango*: *Volcán de Zunil*, alt. 2,500–3,800 meters,
January 22, 1940, Julian A. Steyermark 34744 (type in Herb. Field
Mus.). Northeastern slopes of barranco of *Volcán de Zunil*, in
Abies forest, 3,000 meters, Steyermark 34905.

The plant is related perhaps to *E. prunellaefolium* HBK., a species found in Guatemala, but that differs conspicuously in habit, in the smaller heads in a more compact inflorescence, and in the smaller leaves on relatively short petioles.

STUDIES OF CENTRAL AMERICAN PLANTS—VII

BY

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STUDIES OF CENTRAL AMERICAN PLANTS—VII

PAUL C. STANLEY AND JULIAN A. STEYERMARK

The present paper consists almost wholly of descriptions of new species of Guatemalan plants. The descriptions and illustrations of four of the new Acanthaceae have been supplied by Mr. Emery C. Leonard of the United States National Museum. The paper includes also the diagnosis of a proposed new genus of Rubiaceae from the mountains of Costa Rica.

CYPERACEAE

Carex huehuetea Standl. & Steyermark, sp. nov.—*Planta dense caespitosa, rhizomatibus brevibus crassis, culmis gracilibus erectis 60 cm. altis et ultra, obtuse trigonis, infra nodos purpureo-brunneis, laevibus; foliorum vaginae latae laxae intense purpureo-brunneae; folia numerosa tenuia in sicco pallide viridia, laminis 12-27 cm. longis ca. 8 mm. latis, anguste attenuatis, conspicue costatis, inter nervos inconspicue septatis, planis, marginibus laevibus; spicae paucae vel plures longissime angusteque pedunculatae, ut videtur pendulae, terminalis mascula, laterales femineae vel pro parte androgynae, lineares, plerumque 3-4.5 cm. longae, laxe et subremote floriferae, bracteis filiformibus erectis brevibus basi longe vaginatis, vaginis usque ad 1 cm. longis purpureo-brunneis; glumae pallide brunnescentes vel brunneo-virides oblongo-ovales ca. 2.5 mm. longae, apice abrupte contractae et arista usque ad 5 mm. longa sed vulgo breviore terminatae; perigynia fusiformi-lanceolata viridescentia in sectione compresso-triangularia, manifeste nervata glabra, 3.5 mm. longa 1 mm. lata, in rostrum sensim attenuata; stigmata 3.—Guatemala: Dept. Huehuetenango: Along stream at Cananá, Sierra de los Cuchumatanes, alt. about 2,500 meters, July 18, 1942, Julian A. Steyermark 49055 (type in Herb. Field Mus.).*

The type specimen is in poor condition for study, being in advanced fruit, but the plant is clearly different from any other species known from Central America or Mexico. Its relationship is with *C. perlóngia* Fernald, of southern Mexico and Guatemala. It is noteworthy for its wide leaves, the foliage in general resembling that of *Luzula gigantea*.

Carex Steyermarkii Standl., sp. nov.—Ut videtur caespitosa, culmis erectis crassiusculis ca. 50 cm. altis striatis laevis; folia magna lataque numerosa atque conferta, ut videtur erecta usque ad 40 cm. longa, 16–24 mm. lata, plana, crassiuscula, in sicco pallide viridia, supra sublucida, subtus pallidiora, manifeste costata, subulato-acuminata, ad margines laevia, basi dilatata et vaginaria, prope vaginas intense brunneo-rubra; spicae numerosae inflorescentiam majusculam laxam efformantes, longe graciliter pedunculatae, pendulae, androgynae, elongato-lineares, usque ad 6 cm. longae, laxiflorae, floribus infimis saepe remotis; glumae lanceolato-oblunga acutae, inconspicue mucronatae vel muticae, pallide sordide brunnescentes vel pallide viridi-brunneae; perigynia fusiformi-lanceolata, ca. 5 mm. longa, paullo ultra 1 mm. lata, pallide sordido-brunnea, manifeste nervata, lucida, in rostrum brevem crassum erectum sensim angustata, in sectione obtuse triangularia; stigmata 3.—Guatemala: Dept. Huehuetenango: Sierra de los Cuchumatanes, Cerro Huitz, between Barillas and Mimanhuitz, alt. 1,600–2,600 meters, July 14, 1942, Julian A. Steyermark 48542 (type in Herb. Field Mus.).

The type specimen consists of a single much-weathered plant, in which it is difficult to determine the true characters of the spikes and the general form of the inflorescence. The species, however, is evidently a distinct one, outstanding because of its extremely broad leaves, among the widest to be found in the genus. It is believed that the relationship is with *C. perlonga* Fernald and *C. huehueteca*, described above.

PALMAE

Chamaedorea aequalis Standl. & Steyermark., sp. nov.—Caudex erectus 3–4.5 m. altus 1.5–2 cm. crassus laevis, internodiis superioribus 11–15 cm. longis; frondis vagina oblique aperta ca. 9 cm. longa prominenter costata; petiolus ca. 19 cm. longus gracilis 3 mm. crassus; lamina 37 cm. longa et 23 cm. lata vel ultra; pinnae in utroque latere 17 vel ultra tenues concolores sublucidae regulariter dispositae, apicales inferioribus non latiores basi connatae anguste lanceolatae, non sigmoideae 13–24 cm. longae 1.5–3 cm. latae, longe aequaliter attenuato-acuminatae, basin angustam versus sensim angustatae, plerumque 3-nerviae, nervis secundariis numerosis primariis fere aequalibus; pedunculus inflorescentiae femineae gracilis adscendens vel suberectus 21–30 cm. longus vix ultra 2 mm. crassus; spathae 4–5 tubulosae imbricatae, intermediis ca. 12 cm. longis,

adpressae ca. 5 mm. diam.; spadicis pars ramosa 10–13 cm. longa et aequilata, ramis ca. 10 erecto-patentibus, infimis furcatis, superioribus simplicibus 9–10.5 cm. longis rubris gracilibus, insertionibus vix excavatis, fructibus in spira laxa insertis remotis; corolla sub fructu explanata, petalis late ovatis ca. 2 mm. longis ecostatis subapiculatis, calyce persistente explanato vix ultra 2 mm. lato, lobis 3 late rotundatis; fructus globosus in sicco 6 mm. diam. basi et apice late rotundatus, semine fere aequilongo pallide griseo-brunneo.—Guatemala: Dept. Huehuetenango: In forest of *Liquidambar* on slopes bordering a moist ravine, Cerro Negro, 2 miles west of Las Palmas, Sierra de los Cuchumatanes, alt. 1,600–2,000 meters, August 31, 1942, Julian A. Steyermark 51666 (type in Herb. Field Mus.). Dept. Sololá: Volcán de Atitlán, south-facing slopes, alt. 1,700–3,800 meters, June, 1942, Steyermark 47411.

This plant bears some resemblance to *C. Schippii* Burret, which is rather common in the Atlantic slopes and lowlands of Guatemala and British Honduras, but that species has leaves of quite different appearance, their pinnae having only a single secondary nerve between the more prominent primary nerves. *C. aequalis* is a rather small and slender plant. One specimen bears a section of the caudex with two nodes, each of which produces a pistillate spadix. The spadices apparently are borne well below the leaves.

Chamaedorea Aguilariana Standl. & Steyermark, sp. nov.—
Caudex gracilis viridis 1–3-metralis ca. 8 mm. crassus conspicue annulatus, internodiis plerumque 1.5–2 cm. longis; vagina 9–10 cm. longa 1–1.5 cm. lata, apice obliqua; petiolus gracilis 12–17 cm. longus; lamina ambitu oblonga, vulgo 30–40 cm. longa, rhachi gracillima; pinnae in quoque latere 4–5 regulariter dispositae alternae, apicales confluentes 18–20 cm. longae vulgo 6–7 cm. latae longe falcato-acuminatae, sequentes breviores et angustiores plerumque 11–19 cm. longae et 2.5–5 cm. latae, anguste falcato-acuminatae, sigmoideae, tenues, subtus paullo pallidiores, ca. 5-nerviae, nervis secundariis singulis primariis multo gracilioribus; spadices in axillis foliorum nascentes, masculorum pedunculo 8–20 cm. longo gracili patente vel recurvo, spathis 3–4 tubulosis tenuibus non arcte adpressis 6–7 mm. diam. apice acutis; spadicis rami vulgo 11–14 in tota longitudine floriferi penduli ca. 12 cm. longi, floribus breviter immersis dense insertis 2.5 mm. altis pallide viridibus, calyce minuto brevissime 3-lobo, lobis latissime rotundatis; petala in sicco fusca leviter striata, apice subcoherentia vel libera, ovali-ovata; antherae oblongae; spadicis feminei pedunculus 22–44 cm. longus gracilis

suberectus, partis ramosae rhachi vix ad 6.5 cm. longa, ramis 5–9 gracilibus subflexuosis 10–17 cm. longis, floribus remote spiraliter insertis, fere ut in spadice masculo, petalis insigniter striato-costulatis, ramis pallide aurantiacis; fructus globosus, immaturus ca. 6 mm. diam., basi et apice rotundatus.—Guatemala: Dept. Quezaltenango: Damp wooded quebrada, along old road between Finca Pirineos and Patzulín, alt. 1,200–1,400 meters, February 9, 1941, *Paul C. Standley* 86890 (type in Herb. Field Mus.); along Río Samalá, between Santa María de Jesús and Calahuaché, 1,200 meters, *Steyermark* 33849; between Finca Pirineos and Finca Soledad, lower southern slopes of Volcán de Santa María, 1,300 meters, *Steyermark* 33505. Dept. San Marcos: Volcán de Tajumulco, above Finca El Porvenir, 1,300–1,500 meters, *Steyermark* 37179; Río Mopá, below Rodeo, 600 meters, *Standley* 68759. Dept. Suchitepéquez: Southwestern slopes of Volcán Zunil, between Finca Monte-cristo and Finca Asturias, 1,300 meters, *Steyermark* 35278. Dept. Chimaltenango: Near Sibajá, 1,050 meters, *Standley* 62282. Dept. Escuintla: Below Las Lajas, 900–1,200 meters, *Standley* 64814. Dept. Santa Rosa: Near El Molino, 600 meters, *Standley* 78512.

Local names “pacaya” (given to all species of *Chamaedorea*) and “molinillo,” the latter in reference to the fact that the base of the stem with the cluster of stiff roots is used for stirring coffee and other hot liquids. This plant, which is rather common along the Pacific bocacosta of Guatemala—the coffee region—is related apparently to *C. pulchra* Burret, which has much larger leaves, their numerous segments much longer and narrower, the terminal ones little if at all broader than those just below them. *C. Aguilariana* bears a superficial resemblance to *C. neurochlamys* Burret, a very different plant, however, with narrow, conspicuously curved fruits, to which O. F. Cook has given (but not technically published) the name *Docanthe alba*. The present species is dedicated to Don José Ignacio Aguilar, formerly Director of the Finca Nacional La Aurora, in the outskirts of Guatemala, to whom we are indebted for a great many favors and for a large amount of information regarding Guatemalan plants, as well as for extensive collections of herbarium specimens that have provided many new department records for the flora of Guatemala.

***Chamaedorea brachypoda* Standl. & Steyerm., sp. nov.—**
Caudex gracilis pallide viridis ca. metralis 6–7 mm. crassus, internodiis 6–6.5 cm. longis; folii vagina ca. 6 cm. longa 8 mm. lata tubulosa striato-nervia apice obliqua; petiolus gracilis 9–10 cm.

longus; lamina simplex ca. 25 cm. longa et aequilata basi cuneato-acuta, rhachi ca. 12 cm. longa, nervis primariis utroque latere ca. 13 utrinque prominentibus, nervis secundariis singulis primariis multo tenuioribus, lamina profunde biloba, lobis acutis vel breviter acuminatis angulo recto vel paullo angustiore divergentibus ca. 16 cm. longis et prope basin 10 cm. latis, fere concoloribus; spadices longe infra folia nascentes, pedunculo 3–5 cm. longo gracili sed rigido adscendente; spathae 6 brevissimae, infimis vix ultra 8 mm. longis supremis usque ad 2.5 cm. longis, 4 mm. diam. apice acutis vel acuminatis; spadicis masculi rami 5–6 gracillimi laxiflori 9–10.5 cm. longi, floribus vix subimmersis pallide luteis; calyx vix 2 mm. latus brevissime 3-lobus vel subinteger sub flore explanatus; petala libera 2.5–3 mm. longa ovato-ovalia incurva et apice conniventia; antherae ovales breves; pistillodium columnare apice anguste disciforme dilatatum; spadix femineus masculo similis (bene evolutus non visus), ramis 5–6 et 5–6 cm. longis. — Guatemala: Dept. Izabal: Wet forest, between Bananera and La Presa, base of Sierra del Mico, alt. 150 meters or lower, April 9, 1940, Julian A. Steyermark 39185 (type in Herb. Field Mus.); between Virginia and Lago de Izabal, 100 meters or lower, April 4, 1940, Steyermark 38749.

Local name “pacaya.” This is a close relative of *C. Ernesti-Augusti* Wendland, but in that species the peduncles are mostly 20–25 cm. long, and the pistillate inflorescences are simple, the flower-bearing portion much shorter than the peduncle.

***Chamaedorea carchensis* Standl. & Steyermark, sp. nov.** — Planta acaulis; folia magna, vagina indurata 12 cm. longa fere 2 cm. crassa superne angustata; petiolus 1 m. longus vel paullo ultra anguste sulcatus fere 1 cm. crassus; pinnae subaequales regulariter insertae alternantes utroque latere ca. 15 linear-lanceolatae, terminales vix latiores vel in foliis juvenilibus sequentibus duplo latioribus, pinnis medialibus ca. 40 cm. longis et 3.5 cm. latis rectis aequaliter attenuato-acuminatis, basin versus sensim angustatis, basi ipsa 10–15 mm. lata paullo indurata, pinnis conspicue 1-nerviis, nervis 2 teneris submarginalibus percursis, nervis intermediis tenerrimis inconspicuis; inflorescentiae femineae radicales vel saltem e basi plantae nascentes erectae, pedunculo 34–50 cm. longo crassiusculo apicem versus 4 mm. crasso; spathae 6 imbricatae adpressae ca. 8–10 mm. diam., infimae 3.5 cm. tantum longae, supremae ca. 12 cm. longae apice obliquae, obtusae submucronatae dense striato-nerviae; spadicis feminei pars ramosa 20–26 cm. longa 7–8 cm. lata, rhachi crassiuscula 14–18 cm. longa, ramis 18–25 crassiusculis

viridibus arcuato-erectis sparsifloris; flores vix immersi, alveolis 1–1.2 mm. longis orbicularibus vel late ovalibus; calyx ca. 2 mm. latus incrassatus 3-lobus, lobis rotundo-ovatis obtusissimis; petala 2.5 mm. longa rotundo-ovata obtusa in statu fructifero incrassata; fructus juvenilis vix 5 mm. longus ovalis vel late oblongus apice rotundatus.—Guatemala: Dept. Alta Verapaz: Wet rocky forest along banks of Río Carchá, between Cobán and San Pedro Carchá, alt. about 1,350 meters, March, 1941, *Paul C. Standley* 90160 (type in Herb. Field Mus.); also (juvenile plants) nos. 90161 and 90163.

We are unable to suggest a relationship for this species, which is marked by large leaves with numerous narrow straight pinnae, and especially by the form of the pistillate inflorescence, which arises from the base of the plant and has numerous, almost erect, rather stout branches. The very young plants have simple, deeply bifid leaves. The species grows in the dense, wet, very rich forest along the Río Carchá, one of the few places close to Cobán where one may form some idea of the original forest covering of this part of Guatemala, now so generally denuded for agricultural purposes.

***Chamaedorea digitata* Standl. & Steyerm., sp. nov.**—Caudex gracilis viridis erectus usque ad 1 m. altus, 5–7 mm. diam., internodiis inaequalibus brevibus vel aliquanto elongatis; folia inter minora, vagina 16–21 cm. longa tubulosa apice obliqua 6–13 mm. crassa prominenter costato-nervia, vaginis interdum 8 cm. tantum longis, petiolo gracili vulgo 3–6 cm. longo, laminis plerumque 17–28 cm. longis; pinnae regulariter dispositae utroque latere 5–7 tenues subitus paullo pallidiores lanceolatae vel late lanceolatae sigmoideae 6–11 cm. longae 2.5–3 cm. latae, anguste attenuato-acuminatae, basin versus angustatae 4–6-nerviae, nervis primariis gracillimis sed prominentibus, secondariis inter paria primiorum pluribus tenerimis; inflorescentiae radicales in plantis acaulescentibus vel in elatioribus infra folia nascentes, pedunculo gracillimo 18–30 cm. longo 1.5 mm. crasso; spathae 4–5 tubulosae brunnescentes striato-nerviae 3–4 mm. diam. apice subacutae adpressae; rhachis spadicis masculi fere nulla 5–6 mm. tantum longa, ramis (in planta unica visa) 4 gracilibus remotifloris 7.5–9 cm. longis, floribus paullo immersis depresso-globosis, calyce 1.7 mm. lato, brevissime lobato, lobis truncatis; petala rotundo-ovata obtusa ecostata valvata; spadix femineus parvus, ramis 3–6 crassiusculis arcuato-erectis 3.5–6.5 cm. longis remotifloris, floribus breviter immersis, alveolis oblongis vel ovalibus 1.5 mm. longis; calyx brevissime trilobus 2.5 mm. latus, petalis ovato-rotundis saepe latioribus quam longis,

paullo ultra 2 mm. longis dorso subtrinerviis; fructus immaturus 5–6 mm. longus subglobosus vel ovali-globosus, basi et apice rotundatus. —Guatemala: Dept. Huehuetenango: In *Liquidambar* forest on slopes bordering a moist ravine, Cerro Negro, 2 miles east of Las Palmas, Sierra de los Cuchumatanes, alt. 1,600–2,000 meters, August 31, 1942, Julian A. Steyermark 51683 (type in Herb. Field Mus.). Dept. San Marcos: Volcán de Tajumulco, above Finca El Porvenir, 1,400–1,700 meters, Steyermark 37386. Dept. Sololá: Southern slopes of Volcán de Atitlán, 1,700–3,800 meters, Steyermark 47383. Dept. El Progreso: Sierra de las Minas, hills north of Finca Piamonte, toward summit of Volcán de Santa Luisa, 2,400–3,000 meters, Steyermark 43493. Dept. Alta Verapaz: Dense wet forest, mountains along road between Tactic and the divide on the road to Tamahú, 1,600 meters, Standley 91426.

A small and neat plant, notable for its short and broad sigmoid pinnae with very long and narrow tips, also for the very small pistillate inflorescence, with few branches.

Chamaedorea fusca Standl. & Steyermark, sp. nov.—*Palma elata* erecta 1.5–3 m. alta, caudice 1–1.5 cm. crasso, internodiis inaequalibus 4–15 cm. longis; folia majuscula, vagina ca. 20 cm. longa apice obliqua prominenter costata; petiolus ca. 35 cm. longus crassiusculus usque ad 7 mm. crassus; pinnae crassiusculae regulariter insertae alternantes vel interdum suboppositae subtus paullo pallidiores in utroque latere 5–7, rhombo-lanceolatae vel late lanceolatae sigmoideae, medianae 22–35 cm. longae 3.5–10 cm. latae, longe angustaque caudato-acuminatae vel attenuato-acuminatae, basin versus sensim angustatae, basi ipsa usque 1.5 cm. lata, plerumque 5-nerviae, nervis primariis prominentibus, secundariis multo tenuioribus numerosis, pinnis terminalibus sequentibus brevioribus et vulgo angustioribus; inflorescentiae femineae infra folia nascentes in sicco fere nigrae, pedunculo 20–27 cm. longo apicem versus 4 mm. crasso, rhachi 10–19 cm. longa; spadicis feminei rami simplices vel infimi furcati, 23 vel pauciores, arcuati et patentes vel adscendentes crassiusculi laxiflori, in vivo virides in sicco nigrescentes; flores laxe inserti vix immersi, alveolis suborbicularibus fere 2 mm. longis, in sicco nigrescentes; spathae vulgo 5, infimae 2–3 cm. longae, superiores ca. 10 cm. longae, tubulosae 6–9 mm. diam., striato-nerviae apice obliquae; calyx 2.5 mm. latus breviter trilobus, lobis late rotundatis; petala crassa enervia 2 mm. longa rotundo-ovata obtusissima; fructus ellipsoideus in sicco 10 mm. longus 6–7 mm. latus fere symmetricus apice basique paullo angustatus; semen

immaturum ellipsoideum 7 mm. longum 4 mm. latum.—Guatemala: Dept. Izabal: Between Bananera and La Presa, Sierra del Mico, alt. 300 meters or lower, March 28, 1940, Julian A. Steyermark 38123 (type in Herb. Field Mus.). Dept. Alta Verapaz: Vicinity of Cubilgüitz, alt. 300–350 meters, Steyermark 44380.—Mexico: Monterrey, Campeche, January, 1932, C. L. Lundell 1235.

Outstanding characters of this *Chamaedorea* are the rather large leaves with very broad pinnae whose form reminds one almost of some species of *Zamia*, and the very large pistillate spadices, whose numerous, rather widely spreading branches are blackish in the dry state. The fruits, also, are noteworthy for their elongate form, those of the majority of local species being globose or nearly so.

***Chamaedorea nubium* Standl. & Steyermark, sp. nov.**—Caudex gracilis erectus 1.5–2.5 m. altus 8–10 mm. crassus, internodiis supremis brevibus, inferioribus usque 9.5 cm. longis; folia simplicia, vagina ca. 30 cm. longa tubulosa apice obliqua laxe adpressa ca. 13 mm. diam., striato-nervia, petiolo gracili 19 cm. longo; lamina ca. 45 cm. longa profunde bifida, rhachi ca. 15 cm. longa, segmentis latere superiore 33 cm. longis falcato-acuminatis integris vel sub-integrис, nervis primariis utroque latere ca. 14 prominentibus, secundariis obscuris, basi laminae cuneato-acuta; pedunculi spadicis feminei recurvi 25–27 cm. longi apicem versus 2.5 mm. crassi, spathis (bene evolutis non visis) anguste tubulosis striato-nerviis 3–4 mm. crassis apice acutis adpressis; spadix fructifer ca. 15 cm. longus, rhachi 4 cm. longa vel interdum magis elongata, ramis 5 vel ultra crassiusculis aliquanto undulatis usque ad 10.5 cm. longis adscendentibus vel suberectis spiraliter laxifloris, aurantiacis, floribus subimmersis, alveolis ca. 2.5 mm. longis; calyx brevissimus brevissime 3-lobus, lobis latissimis subtruncatis; petala in statu fructifero incrassata semiorbicularia apice rotundata latiora quam longa 2.5 mm. longa; fructus late ovalis vel oboviedo-ovalis ca. 10 mm. longus et 7 mm. latus basi et apice rotundatus.—Guatemala: Dept. El Progreso: Sierra de las Minas, hills north of Finca Piamonte, toward the summit of Volcán de Santa Luisa, in cloud forest, alt. about 2,900 meters, February 5, 1942, Julian A. Steyermark 43583a (type in Herb. Field Mus.). Dept. Huehuetenango: Sierra de los Cuchumatanes, Cerro Huitz, between Mimanhuitz and Yulhuitz, alt. 1,500–2,600 meters, Steyermark 48612.

The second collection cited is in poor condition but probably referable here. This is a relative of *C. Ernesti-Augusti* Wendland, but that species has simple pistillate spadices.

***Chamaedorea Pachecoana* Standl. & Steyermark, sp. nov.**—
Palma nana vix ultra 60 cm. alta, acaulis vel subacaulis, caudice vix ad 8 cm. longo, ca. 7 mm. diam., densissime annulato, internodiis vix ad 6 mm. longis; folia parva pinnatisecta plerumque 30–36 cm. longa et 8–13 cm. lata, vagina ca. 5 cm. longa usque ad basin fissa laxa striato-nervia, petiolo gracillimo 7–17 cm. longo; pinnae tenues late rhombo-lanceolatae vel oblongo-lanceolatae 4.5–8 cm. longae 1.5–2 cm. latae vel interdum paullo majores, longe angusteque falcato-acuminatae, sigmoideae, basi arcuato-cuneatae, basi ipsa angusta, regulariter dispositae alternae vel suboppositae, terminales coalitae, interdum sequentibus paullo longiores et latiores, omnes 3-nerviae, nervis secundariis numerosis inconspicuis; pedunculi gracillimi plerumque 11–23 cm. longi supra vix ultra 1 mm. crassi; spathae 5–6 angustissime tubulosae vix 2 mm. diam. arcte adpressae, superiores 5–7.5 cm. longae apice obliquae; spadix masculus 7–11 cm. longus, rhachi brevissima, ramis 2–5 usque ad basin densifloris, floribus plurimis viridescenti-luteis subimmersis 3 mm. longis, calyce 2.5 mm. lato breviter trilobo; petala valvata apice incurva late ovata obtusa enervia, antheris oblongo-ovatis obtusis; spadix femineus simplex et 5–10 cm. longus vel saepe furcatus et aequilongus, ramis sparse paucifloris, crassiusculis rectis, floribus spiraliter dispositis subimmersis, rhachi rubra vel aurantiaca; calyx 2 mm. latus breviter trilobus, lobis late rotundatis; petala rotundo-ovata 2 mm. longa obtusissima leviter striato-nervia; fructus matus niger globosus vel ovali-globosus 6–8 mm. longus basi et apice rotundatus symmetricus.—Guatemala: Dept. Guatemala: Cultivated in the garden of Don Mariano Pacheco Herrarte, Guatemala; said to come from Dept. Totonicapán, but probably from some other part of the Occidente; January 20, 1939, *Paul C. Standley* 63104 (type in Herb. Field Mus.). Dept. Quezaltenango: Along old road between Finca Pirineos and Patzulín, alt. 1,200–1,400 meters, *Standley* 86596, 86654, 86804, 86924, 87030, 87027, 87009, 87017, 87011, 87030; Finca Pirineos, below Santa María de Jesús, 1,350 meters, *Standley* 68198; Quebrada San Gerónimo, Finca Pirineos, 1,300–2,000 meters, *Steyermark* 33333.

Local name “pacaya.” This is easily the smallest of all the known palms of Guatemala, and one of the most attractive. Although *C. elegans* Mart. blooms when even smaller, it soon attains a much greater size, becoming 2 meters high or more. For pot culture *C. elegans* is probably more desirable, since it is more slender and graceful, but *C. Pachecoana* is a much more leafy and denser plant, and probably would not soon become lank and ungainly, as *C. elegans*

does after a short period of cultivation in pots. The plant here described is well known in Guatemala, and occasionally is seen in pots about patios. It is common in the moist forest of the lower reaches of the Samalá Valley. It is somewhat surprising that it was not found long ago by some of the collectors in search of palms for introduction into Europe, but it does not closely resemble any Mexican palm of which we have seen a representation. Rather strangely, the Guatemalan Chamaedoreas have all, so far as they are localized, with one exception, been described from the Cobán region, and one dependent upon literature alone would be justified in supposing that Chamaedoreas were not found in other parts of the country. As a matter of fact, they are quite as plentiful, if not more so, in the forests of the Pacific slope, especially in the areas devoted to coffee culture.

Chamaedorea quezalteca Standl. & Steyermark, sp. nov.—*Palma* *gracilis* ca. 1.5 m. *alta*, *caudice* *ferē* 1 cm. *diam.* *lucido*, *internodiis* 1.5–3 cm. *longis*; *vagina* ca. 17.5 cm. *longa* *tubulosa* *ferē* 1.5 cm. *crassa* *tenuiter* *striato-nervia*, *petiolo* *gracili* *elongato* 2.5 mm. *crasso*; *folia* *pinnatisecta*, *pinnis* *utroque* *latere* ca. 16 *regulariter* *dispositis* *alternantibus* *tenuibus* *utrinque* *intense* *viridibus*, *lineari-lanceolatis* *vix* *vel* *non* *sigmoideis*, *majoribus* *medialibus* ca. 19 cm. *longis* *et* 2 cm. *latis* *longe* *attenuato-acuminatis*, *basin* *versus* *sensim* *angustatis*, *plerumque* 5-*nerviis*, *nervis* *secundariis* *tenerrimis* *obscuris*, *vel* 3-*nerviis* *cum* *nervo* *secundario* *singulo* *prominente* *interposito*, *superioribus* 9 cm. *tantum* *longis* *et* *vix* 1 cm. *latis*; *pedunculus* *gracillimus* *usque* *ad* 25 cm. *longus* *apice* 1.5 mm. *crassus*, *spathis* (*perfectis* *non* *visis*) 3 mm. *crassis* *tubulosis* *apice* *obliquis*; *spadix* *femineus* *simplex* ca. 8 cm. *longus* *spiraliter* *laxeque* *pauciflorus*, *rhachi* *gracillima* *subflexuosa*, *floribus* *distantibus* *non* *immersis*, *alveolis* *late* *ovalibus* ca. 1.5 mm. *longis*; *calyx* *sub* *fructu* *explanatus* 2.5 mm. *latus* *breviter* *trilobus*, *lobis* *late* *rotundatis* *vel* *subtruncatis*; *petala* *in* *statu* *fructifero* *incrassata* *explanata* *ovato-rotundata* *vel* *latissime* *ovata*, *interdum* *latiora* *quam* *longa*, ca. 3 mm. *longa* *interdum* 4 mm. *lata*, *apice* *late* *rotundata* *enervia*; *fructus* *imma-* *turus* *subglobosus* *symmetricus* ca. 6 mm. *diam.* *basi* *et* *apice* *late* *rotundatus*.—Guatemala: Dept. Quezaltenango: Dense damp mixed mountain forest, along old road between Finca Pirineos and Patzulín, alt. 1,200–1,400 meters, February 9, 1941, *Paul C. Standley* 87159 (type in Herb. Field Mus.).

Apparently this is a rare plant, since we have made only one collection of it. It is related to *C. adscendens* (Dammer) Burret,

which is confined to the Atlantic watershed of Guatemala, and has numerous, evident and somewhat prominent secondary nerves between the primary nerves of the leaflets.

Chamaedorea Rojasiana Standl. & Steyermark, sp. nov.—*Palma gracilis* erecta interdum acaulis, vulgo 1–1.5 m. alta, caudice 6–8 mm. crasso, internodiis 5.5–7 cm. longis vel interdum multo brevioribus; vagina 7–12 cm. longa 8–14 mm. crassa apice obliqua prominenter striato-nervia, petiolo gracili 5–20 cm. longo; folia inter minora pinnatisepta, pinnis tenuibus fere concoloribus vel subtus paullo pallidi-oribus, utroque latere 2–4 regulariter dispositis insigniter sigmoideis, terminalibus 2 coalitis 19–25 cm. longis 5.5–7 cm. latis, sequentibus brevioribus ca. 3 cm. latis, infimis ca. 8 cm. longis atque 2 cm. latis, omnibus falcato-acuminatis, terminalibus 7–8-nerviis, inferioribus plerumque 3-nerviis, nervis secondariis paucis tenuibus; pedunculi 11–20 cm. longi gracillimi, apice vix 2 mm. crassi, adscendentibus vel patentes; spathae 3–4 anguste tubulosae adpressae vix ultra 3 mm. crassae striato-nerviae; spadix masculus simplex vel saepe e ramis 2–3 compositus, ramis usque ad basin densifloris 10–14.5 cm. longis 4 mm. crassis, floribus sat profunde immersis, calyce 2.5 mm. lato fere truncato obscure trilobo; petala apice valvata striato-nervia ca. 2 mm. longa; spadix feminineus simplex vel e ramis 2 compositus, ramis aurantiacis 7–9 cm. longis remote spiraliter subpaucifloris, floribus profunde immersis, alveolis oblongis vel ovalibus 2.5 mm. longis, calyce brevissimo obscure trilobo; petala irregulare rotundata prominenter striato-nervia; fructus primo aurantiacus maturitate purpureo-niger subglobosus vel ovali-ellipsoideus in sicco 7–9 mm. longus, basi et apice rotundatus.—Guatemala: Dept. Quezaltenango: On forested banks, Quebrada San Gerónimo, Finca Pirineos, lower southern slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–2,000 meters, January 1–2, 1940, Julian A. Steyermark 33479 (type in Herb. Field Mus.); between Finca Pirineos and Patzulín, alt. 1,300–1,500 meters, Steyermark 33649; along old road between Finca Pirineos and Patzulín, alt. 1,200–1,400 meters, Standley 86937, 86933, 86947, and 86713; Finca Pirineos, alt. 1,350 meters, Standley 68187, 68308, 68340. Dept. San Marcos: Volcán de Tajumulco, Finca El Porvenir, alt. 1,300–1,500 meters, Steyermark 37526, 37527; Cerro de Mono above Finca El Porvenir, alt. 1,400–1,700 meters, Steyermark 37387; Loma Trocodoná, Finca El Porvenir, Steyermark 37527. Dept. Huehuetenango: Sierra de los Cuchumatanes, near Maxbal, alt. 1,500 meters, Steyermark 48856. Dept. Sololá: Northern slope, Volcán

de Atitlán, alt. 2,600 meters, *Steyermark* 47355. Dept. Suchitepéquez: Southwestern slopes of Volcán de Zunil, alt. 1,200 meters, *Steyermark* 35247, 35248.

Known locally as "pacaya," or sometimes "molinillo." Related, apparently, to *C. oreophila* Mart., of southern Mexico, because of the form of the inflorescences. That species has much more numerous leaf segments, the middle ones being relatively much narrower. *C. Rojasiana* is named for Professor Ulises Rojas, Director of the Jardín Botánico of Guatemala, on and near whose finca, Pirineos, many of the specimens were collected.

***Chamaedorea Skutchii* Standl. & Steyerm., sp. nov.**—Caudex gracilis 2.5 m. altus ca. 8 mm. crassus, internodiis 2.5-3 cm. longis; petiolus 22 cm. longus vel paullo ultra, lamina pinnatisecta; pinnae utroque latere 8, tenues, subtus paullo pallidiores, terminales 27 cm. longae et fere 8 cm. latae, falcato-acuminatae, latere exteriore inconspicue crenato-serratae, 7-nerviae, sequentes approximatae regulariter dispositae alternantes 15-21 cm. longae 13-16 mm. latae non sigmoideae subfalcate longiattenuatae 3-nerviae, nervis secundariis tenerimis; inflorescentia feminea infra folia nascens, pedunculo gracili ca. 21 cm. longo apice fere 4 mm. crasso; spadix ca. 14 cm. longus, rhachi ca. 3 cm. longa, ramis 7 simplicibus crassis aurantiacis spiraliter remoteque floriferis, floribus breviter immersis, alveolis ovalibus 2.5 mm. longis; calyx ca. 3 mm. latus brevissime trilobus, lobis late rotundatis; petala 2.5 mm. longa in statu fructifero incrassata ovato-rotundata sub fructu explanata; fructus niger ovali-globosus in sicco 10 mm. longus 8 mm. latus symmetricus basi et apice rotundatus; semen ovali-globosum 8 mm. longum.—Guatemala: Dept. Quezaltenango: Volcán de Zunil, alt. 2,400 meters, August 4, 1934, *Alexander F. Skutch* 935 (type in Herb. Field Mus.).

According to the collector, the plants bear usually 4 or 5 leaves. The plant is probably a local or rare one, since it has not appeared among the numerous palm collections made in the same general region. It has no particularly outstanding characters, although the broad uppermost pinnae are rather distinctive, and this particular combination of fruit and leaf characters is not matched in any other Guatemalan species of the genus.

***Chamaedorea stenocarpa* Standl. & Steyerm., sp. nov.**—Planta acaulis nana ca. 60 cm. alta; folia 5 vel plura, 60 cm. longa vel breviora, vagina 4-4.5 cm. tantum longa sursum angustata striato-nervia, petiolo gracili 12-20 cm. longo, rhachi 14-27 cm. longa

anguste marginata, lamina pinnatisecta 14–32 cm. longa 10–20 cm. lata; pinnae tenues concolores utroque latere 10–14 regulariter dispositae anguste oblongo-lanceolatae aliquanto sigmoideae, mediales 5.5–12 cm. longae 1.2–2.5 cm. latae, attenuato-acuminatae, basin versus angustatae, basi ipsa ca. 8 mm. lata, 3-nerviae, nervis primariis tenuibus prominentibus, secundariis inter paria singulis tenerimis et inconspicuis; pinnae terminales 5–7.5 cm. longae 8–15 mm. latae 2–3-nerviae; pedunculus femineus gracilis erectus 18 cm. longus apice 1.5 mm. crassus; spathae 3 vel ultra anguste tubulosae fere 3 mm. diam. arcte adpressae apice obliquae prominenter nervosae; spadix crassiusculus rectus 4 cm. longus intense aurantiacus, subdensiflorus, floribus vix immersis spiraliter insertis, alveolis ellipticis 1.8 mm. longis; calyx minutus brevissime trilobus; petala enervia fere 3 mm. longa rotundo-ovata obtusa; fructus immaturus oblongus in sicco 8 mm. longus 4 mm. latus apice obtusus vel rotundatus, basi obtusus.—Guatemala: Dept. Izabal: Dense wet forest, Cerro San Gil, alt. 650–900 meters, December 25, 1941, Julian A. Steyermark 41893 (type in Herb. Field Mus.).

One of the smallest of Guatemalan palms, noteworthy for the numerous, very thin, deep green pinnae, distinctly sigmoid in outline, and the very short, simple spadix, bearing numerous oblong fruits.

Chamaedorea stricta Standl. & Steyermark, sp. nov.—Planta acaulis; folia vulgo 2–3 erecta subrigida concoloria vel subtus paullo pallidiora, vagina 8–27 cm. longa sursum attenuata striato-nervia sublaxa, petiolo 28–35 cm. longo usque ad 7 mm. crasso; lamina 26–60 cm. longa 13–23 cm. lata, basi cuneato-angustata, apice profunde bifida, rhachi 14–30 cm. longa, lobis longe acuminatis fere erectis, nervis primariis utroque latere 12–14 prominentibus, nervis secundariis numerosis tenerimis inconspicuis; pedunculus radicalis erectus gracilis sed subrigidus 80–100 cm. longus, apice 2 mm. diam.; spathae 7–9 anguste tubulosae, arcte adpressae, pallide virides tenerime nervosae, infimae 7 cm. tantum longae, mediales 11–28 cm. longae ca. 4 mm. diam. apice acuto obliquae; spadix masculus ca. 24 cm. longus, rhachi ca. 3.5 cm. longa, ramis 7 fere ad basin densifloris gracilibus et subflexuosis, floribus sat profunde immersis, alveolis anguste ellipticis 2.5 mm. longis; calyx brevissimus 2.5 mm. latus brevissime trilobus; petala enervia libera late ovata obtusa fere 4 mm. longa erecta; spadicis feminei rami 3–4 erecti crassiusculi 8–14.5 cm. longi, floribus remote spiraliter insertis, rhachi 1.5–3 cm. longa, rubro-aurantiaca, floribus vix immersis, alveolis ellipticis vel ovalibus 2.5 mm. longis; calyx 3.5 mm. longus sub fructu explanatus

brevissime trilobus; petala enervia fere orbicularia subapiculata ca. 3 mm. longa et aequilata; fructus subglobosus 8 mm. longus et fere aequilatus basi et apice late rotundatus; semen globosum albido-brunneum fructu vix minus.—Guatemala: Dept. San Marcos: Volcán de Tajumulco, on narrow dry ridge above Finca El Porvenir, up Cerro de Mono, alt. 1,400–1,700 meters, March 9, 1940, Julian A. Steyermark 37381 (type in Herb. Field Mus.); above Finca El Porvenir, between Todos Santos Chiquitos and Loma de la Paloma, alt. 1,400–1,700 meters, Steyermark 37252.

Among the few species with simple leaves, this is outstanding in the greatly elongate, stiffly erect, radical inflorescences. In the genus *Chamaedorea* such elongation of the peduncles is very unusual and when they are much elongate, they usually are spreading or even pendent.

***Chamaedorea vulgata* Standl. & Steyermark, sp. nov.**—*Palma elata, erecta, caudice vulgo 1.5–4.5 m. alto 1–2 cm. crasso viridi conspicue annulato, internodiis 4–6.5 cm. longis; folia magna pinnatisecta, vagina ca. 26 cm. longa atque 1–1.5 cm. crassa adpressa striatovernia, petiolo ca. 55 cm. longo recto 7–9 mm. crasso; pinnae utroque latere ca. 24 regulariter dispositae alternantes tenues intense virides concolores lanceolato-lineares, 27–55 cm. longae 3–7 cm. latae, non sigmoideae, longe attenuato-acuminatae, basin versus sensim angustatae, basi ipsa 6–22 mm. lata, prominenter 5-nerviae, nervis secundariis elevatis sed primariis tenuioribus numerosis, pinnis superioribus sensim decrescentibus, terminalibus interdum 9.5 cm. tantum longis sed vulgo multo longioribus, inferioribus aequilatis, infimis medialibus aliquanto brevioribus; inflorescentiae infra folia nascentes, pedunculis crassiusculis patentibus vel pendulis, interdum adscendentibus, 25–50 cm. longis superne 2–4 mm. crassis; spathae 4–5 tubulosae subadpressae, 6–12 mm. latae, infimae 2.5 cm. longae, supremae 6–21 cm. longae acutae apice obliquae, prominenter striatoverniae; spadicis masculi rhachis 1–2 cm. tantum longa, ramis 3–9 gracilibus 15–20 cm. longis sat dense vel inferne sublaxe fere ad basin multifloris, ut videtur pendulis, floribus vix immersis, alveolis ovalibus fere 2 mm. longis; calyx 2.5–3 mm. latus brevissime trilobus, lobis latissime rotundatis; petala viridia enervia crassiuscula late ovata obtusa ca. 3 mm. longa libera; spadicis feminei rhachis crassa ca. 4 cm. vel usque ad 12 cm. longa, ramis 6 vel interdum usque 15 gracilibus aurantiacis, adscendentibus vel praesertim in statu fructifero pendulis, interdum flexuosis, alveolis late ovalibus vel suborbicularibus; calyx sub fructu explanatus brevissime trilobus;*

petala enervia late ovato-rotundata in statu fructifero ca. 4 mm. lata et fere aequilonga apiculata; fructus globosus symmetricus 9 mm. longus et aequilatus basi et apice late rotundatus; semen globosum.—Guatemala: Dept. San Marcos: In forest, Volcán de Tajumulco, between Finca El Porvenir and Loma Corona, 9 miles northwest of El Porvenir, alt. 1,300–2,000 meters, March 14, 1940, Julian A. Steyermark 37735 (7 sheets; type in Herb. Field Mus.); Volcán de Tacaná, between Canjulá and La Unión Juárez, alt. 2,000 meters or higher, Steyermark 36455. Dept. Quezaltenango: Between Finca Pirineos and Finca Soledad, lower southern slopes of Volcán de Santa María, 1,300 meters, Steyermark 33514, 33518; Fuentes Georginas, western slope of Volcán de Zunil, 2,850 meters, Standley 67344. Dept. Huehuetenango: Sierra de los Cuchumatanes, near Maxbal, alt. 1,500 meters, Steyermark 48737; Sierra de los Cuchumatanes, Cerro Cananá, between Nucapuxlac and Cananá, alt. 2,500 meters, Steyermark 49018. Dept. Suchitepéquez: Volcán de Santa Clara, between Finca Naranjo and the upper slopes, alt. 1,300 meters or higher, Steyermark 46673.

Local names are "pacaya," "cum" (in San Marcos), "pacaya chiquita," "pacaya de montaña," and "bojón." The range of the species is apparently somewhat wider than is indicated by the specimens cited. This is a most unsatisfactory plant to name, and perhaps a new name for it is unnecessary, but we have not been able to identify it with any other Guatemalan species or with any of those recorded for Mexico. The relationship is obviously with *C. Tepejilote* Liebm., a common Guatemalan species distinguished by its oval or oblong fruits, and often by its much greater size, although many of the wild plants of *C. Tepejilote* are no larger than those of *C. vulgata*. It is possible, further, that two species really are represented by the collections here referred to *C. vulgata*, but this can not be decided until a larger number of collections is available for study. As here treated, *C. vulgata* is one of the most common small palms of the mountains of the Occidente of Guatemala.

ARACEAE

***Anthurium Coibionii* Standl. & Steyermark, sp. nov.**—Subacaulescens, caudice brevissimo fere 2 cm. crasso; petioli crassi 13–35 cm. longi 4–7 mm. crassi ca. 1 cm. infra apicem geniculati, geniculo longiore quam crasso; lamina in sicco coriacea, in vivo crassa atque carnosa, oblongo-lanceolata, 30–60 cm. longa 8–14 cm. lata, e basi ad apicem acutum longiattenuata, basi truncata vel

truncato-rotundata, manifeste 3-nervia, supra viridis, nervis manifestis, subtus pallidior et glaucescens, costa crassissima elevata, nervis primariis lateralibus numerosis angulo angusto adscendentibus maxime elevatis, nervis intermediis venisque prominentibus laxe reticulatis; pedunculi ca. 35 cm. longi graciles vel crassi; spatha oblongo-lanceolata brunneo-viridis 7.5 cm. longa et 2 cm. lata vel brevior, obtusa atque cuspidata, basi valde amplexicaulis; spadix crasse 1.5 cm. longe stipitatus caudiformis, 5-12 cm. longus 6-9 mm. crassus, obtusus, sursum vix attenuatus, brunneo-purpurascens; ovaria subglobosa apice rotundata vel truncata.—Guatemala: Dept. Zacapa: Oak-pine forest along upper reaches of Río Sitio Nuevo, Sierra de las Minas, between Santa Rosalía and the first waterfall, alt. 1,200-1,500 meters, January 9, 1942, Julian A. Steyermark 42212 (type in Herb. Field Mus.); cloud forest in ravine bordering Quebrada Alejandría, vicinity of Finca Alejandría, summit of Sierra de las Minas, 2,500 meters, October, 1939, Steyermark 29877.

The plant was seen also in cultivation in the celebrated garden of Don Mariano Pacheco in Guatemala City (Standley 63109), where the plants were said to have been brought from Verapaz, probably from the Sierra de las Minas of Baja Verapaz. *A. Corbionii* is related obviously to *A. parvispathum* Hemsl., a common plant of the dry hills of Santa Rosa, Baja Verapaz, and confined, so far as known, to that region. *A. parvispathum* has leaves appreciably different in outline, and constantly so, and a sessile spadix. This species is dedicated to William Corbion, Jr., of Webster Groves, Missouri, who as general assistant accompanied the junior author on his first expedition to Guatemala and contributed much to the success of that expedition.

***Anthurium radicosum* Standl. & Steyermark, sp. nov.**—Herba epiphytica, caudice gracili elongato 3-4 mm. crasso, internodiis 7-12 cm. longis vel interdum brevibus, caulis radices numerosas elongatas carnosas emittentibus; cataphylla caduca tenuia brunnea obtusa ca. 4 cm. longa et 1 cm. lata; petioli gracillimi 4-6 cm. longi breviter vaginati; lamina in sicco tenuis et fere membranacea anguste elliptico-oblonga 11-16 cm. longa 4-5 cm. lata, subabrupte acuminata, basi acuta vel breviter acuminata, in sicco fuscens, subtus paulo pallidior et brunnescens, nervis primariis utroque latere ca. 12 gracillimis et vix prominulis inconspicuis in nervum collectivum submarginalem conjunctis; pedunculi gracillimi ca. 10 cm. longi; spatha reflexa pallide viridis oblongo-ovata 1.5-2 cm. longa ca. 7 mm. lata, obtusa atque apiculata, basi amplexicaulis; spadix sessilis vel

subsessilis gracilis ad anthesin 4.5 cm. longus 3 mm. crassus, sursum non angustatus, floribus subpaucis.—Guatemala: Dept. Alta Verapaz: Epiphytic on tree, along Río Icvolay, north and northwest of Finca Cubilgüitz to Quebrada Diablo, alt. 300–350 meters, March 6, 1942, Julian A. Steyermark 44776 (type in Herb. Field Mus.).—British Honduras: Pueblo Viejo, 500 meters, February, 1924, W. A. Schipp S678.

A relative of *A. Pittieri* Engler, of Costa Rica and Panama, but in that species the spathes are usually much larger and the spadix is slender-stipitate.

***Anthurium retiferum* Standl. & Steyermark, sp. nov.**—Petioli 26–37 cm. longi et ultra crassi (6–8 mm.), 1–1.5 cm. infra basem laminae geniculati, geniculo fere 1 cm. crasso; lamina in sicco subcoriacea rigida plus minusve brunnescens vel fulvescens, oblongo-elliptica vel anguste oblongo-elliptica, 32–42 cm. longa 12–19 cm. lata, acuta vel apice subobtusa et apiculata, basi rotundata vel obtusissima, sublucida, fere concolor, nervis lateralibus primariis utroque latere ca. 12 supra impressis, subtus gracilibus maxime elevatis, nervis secundariis venisque valde elevatis et laxe reticulatis; pedunculus 19 cm. longus 4 mm. crassus; spatha (perfecta non visa) reflexa roseo-purpurea plus quam 6.5 cm. longa, ca. 13 mm. lata, cuspidato-acuminata; spadix sessilis cylindraceus 9 cm. longus 5 mm. crassus purpurascens.—Guatemala: Dept. Huehuetenango: Sierra de los Cuchumatanes, epiphytic, Cerro Huitz, between Mimanhuitz and Yulhuitz, alt. 1,500–2,600 meters, July 14, 1942, Julian A. Steyermark 48621 (type in Herb. Field Mus.); Cerro Negro, 2 miles east of Las Palmas, 1,600–2,000 meters, terrestrial on ridge in *Liquidambar* forest, Steyermark 51676.

A well-marked species, apparently, not very closely related to any other Guatemalan one, but perhaps of the general alliance of *A. parvispathum* Hemsl.

***Anthurium titanium* Standl. & Steyermark, sp. nov.**—Planta gigantea, petiolis 55 cm. longis vel multo longioribus vix vaginatis sed prope basin paullo dilatatis, ca. 1.5 cm. infra basin laminae geniculatis, geniculo 1.5 cm. crasso; lamina in sicco chartacea vel crasse membranacea, rotundato-cordata, 50–120 cm. longa ca. 40–60 cm. lata, apice obtusa vel rotundata et late breviterque cuspidata, basi profunde cordata, sinu lato aperto, integra, e basi 7-nervia, nervis 2 extimis fere 1 cm. crassis, margine exteriore

longitudine 4–6 cm. nudo, 5–6 nervos crassos e latere inferiore emit-tentibus, nervis primariis lateralibus gracilibus remotis prominentibus in nervum collectivum e margine remotum conjunctis, venis prominulis laxe reticulatis; pedunculus 70 cm. longus et ultra prope basin 2 cm. crassus; spatha coriacea erecta, viridis rubro vel purpureo tincta, lanceolata, 20–26 cm. longa 4.5–6.5 cm. prope basin lata, anguste attenuato-acuminata, basi valde amplexicaulis; spadix brunnescenti-viridis caudiformis ca. 19–30 cm. longus 12–18 mm. prope basin crassus vel in vivo 2.5–5 cm. crassus, sensim attenuatus, spatha longior, crasse 3–4.5 cm. longe stipitatus, stipite usque 12 mm. crasso.—Guatemala: Dept. San Marcos: Terrestrial, Volcán de Tajumulco, above Finca El Porvenir, along Río Cabús to within 2 miles of Cueva de las Palomas, alt. 1,300–1,500 meters, March 16, 1940, Julian A. Steyermark 37963 (type in Herb. Field Mus.).

This appears to be an ally of *A. Liebmannii* Schott of Oaxaca, with which it was first identified, but in that species the leaves are 5-nerved from the base, and the spadix is sessile or nearly so.

Monstera grandifolia Standl. & Steyermark, sp. nov.—Frutex epiphyticus scandens, caulis elongatis ca. 2 cm. crassis, glaber; petioli graciles ca. 25–35 cm. longi usque ad apicem anguste vaginati, geniculo ca. 15 mm. longo atque 8 mm. crasso; lamina crassa oblongo-ovata, ca. 50 cm. longa atque 26 cm. lata vel major et 35 cm. lata, ut videtur apice obtusa vel rotundata et breviter cuspidata, prope basin paullo angustata, basi ipsa late breviter cordata plus minusve inaequali, costa subtus crassa prominente, nervis primariis crassis prominentibus; pedunculi ca. 11 cm. longi, 1 cm. crassi; spatha ignota; spadix immaturus cylindraceus sessilis 18 cm. longus, 3 cm. crassus, dense multiflorus; stylus brevissimus lateque truncatus vel subtruncatus.—Guatemala: Dept. Petén: Low forest between Finca Yalpemech and Chinajá, alt. 50–100 meters, March 28, 1942, Julian A. Steyermark 45423 (type in Herb. Field Mus.).

Here probably belongs also Steyermark 38142, from Montaña del Mico, Izabal. It differs only in having the leaf blades distinctly acute at the base and falcately acuminate at the apex. From the common *M. acuminata* C. Koch of Guatemala this differs in its much larger leaves. Those of that species are either very obtuse or rounded at the base. In *M. belizensis* Lundell, which we have not seen, a species of nearby British Honduras, the leaves sometimes have a few perforations, and the style is conspicuously elongate.

COMMELINACEAE

Commelina alpestris Standl. & Steyermark, sp. nov.—Perennis, radicibus plurimis elongatis crasse carnosis fasciculatis, saepe acaulescens, vel in statu fructifero e basi vel paullo supra basin pauciramosa et usque ad 30 cm. alta vel ultra; folia omnia radicalia vel pauca caulina prope basin plantae evoluta, lanceolata, 11 cm. longa et 2.5 cm. lata vel minora, attenuato-acuminata, basi dilatata et vaginantia, vaginis membranaceis pallidis ca. 2.5 cm. longis et 1 cm. latis eciliatis; lamina glabra eciliata, supra viridis subtus paullo pallidior, marginibus cartilagineo-incrassatis; pedunculi plerumque simplices et scapiformes inter folia nascentes vel saepius e caule brevi basi 1-2-foliato nascentes, pedunculis primis et interdum omnibus brevissimis et vaginis fere celatis, pedunculis fructiferis vulgo solemniter elongatis et usque 22 cm. longis crassis et usque 5 mm. latis, laevibus glabrisque; spatha ad anthesin viridis ca. 3-3.5 cm. longa et complicata 2-2.5 cm. lata, obtusa vel acuta, in statu fructifero usque 3 cm. lata et 4 cm. longa, sparse hirsutula, insigniter inter nervos transverso-venosa; flores plurimi, pedicellis brevibus crassis glabris; sepala glabra pallide viridia 5 mm. longa subacuta; petala magna intense caerulea ca. 15 mm. longa.—Guatemala: Dept. Huehuetenango: Sierra de los Cuchumatanes, rocky limestone outcrops with *Juniperus*, vicinity of Chémal, alt. 3,700 meters, August 8, 1942, Julian A. Steyermark 50265 (type in Herb. Field Mus.); same region, December, 1940, Standley 81082; dry slopes between Chiantla and Patio de Bolas, alt. 2,500 meters, Steyermark 48238; near Tunimá, alt. 3,300-3,500 meters, Steyermark 48308. Dept. Chimaltenango: Open meadow, Cerro de Teepám, region of Santa Elena, alt. 2,700 meters, December, 1938, Standley 58683; August, 1940, John R. Johnston 1715.

The relationship of this plant is with *C. coelestis* Willd., which is widely distributed in the mountains of Guatemala, and likewise ascends sometimes to high elevations. *C. alpestris*, however, is distinguishable at a glance from all Mexican and Guatemalan material of *C. coelestis* that we have seen, for it is acaulescent or has very short stems from which arise several very stout and thick, much elongate, scape-like peduncles. The spathes of *C. coelestis* are relatively and usually absolutely smaller than those of *C. alpestris*.

Zebrina huehuetea Standl. & Steyermark, sp. nov.—Perennis, caulis decumbentibus vel adscendentibus, e nodis radicantibus, glaucis, glabris, 85 cm. longis; folia subsessilia, supra viridia subtus

argillaceo-viridia, glabra, lanceolata vel elliptico-lanceolata, 9–15 cm. longa 3–6 cm. lata; vaginae 1.5–2.2 cm. longae, glabrae vel apice parce ciliatae; bracteae 2 inaequales, 3–8 cm. longae; sepala connata, tubo 6 mm. longo, lobis 3 mm. longis, glabra; corolla alba, tubo 1.5 cm. longo, lobis elliptico-oblongis obtusis 6–7 mm. longis 2.5 mm. latis; stamina 6 paulo inaequalia; filamenta alba barbata 2–2.5 mm. longa; antherae albae, loculis rotundis.—Guatemala: Dept. Huehuetenango: Barranco slopes, along Río Trapichillo, between Paso del Boquerón below La Libertad and Democracia, alt. 1,000–2,100 meters, August 22, 1942, Julian A. Steyermark 51016 (type in Herb. Field Mus.).

The gamopetalous corolla and calyx place this plant in *Zebrina*. It is distinguished at once from *Z. pendula* and other later species of that genus by the glaucous stems, the glabrous leaves which are green above and silvery green beneath, the glabrous or almost glabrous sheaths which are only slightly ciliate at the apex, and the white corolla, filaments, and anthers.

LILIACEAE

***Smilacina crassipes* Standl. & Steyermark, sp. nov.**—Terrestris vel epiphytica erecta vel dependens, caule interdum metrali crasso inferne fere 1 cm. crasso, basi aliquanto bulboso-incrassato; folia numerosa membranacea lanceolata vel oblongo-lanceolata vel oblongo-elliptica, vulgo 17–20 cm. longa et 4.5–5.5 cm. lata, interdum usque 8.5 cm. lata, attenuato-acuminata, basi obtusa vel rotundata et in petiolum crassum usque 7 mm. longum contracta; inflorescentia anguste paniculata 10–15 cm. longa 5–6 cm. lata, rhachi crassa angulata, ramis paucis angulo recto divaricatis crassis angulatis, vulgo 2–4-floris, pedicellis 5 mm. longis vel brevioribus crassis in sicco acute angulatis; perianthium pallide flavescentis campanulatum, segmentis crassiusculis ovalibus vel ovari-ovalibus 6–7 mm. longis apice rotundatis, ad anthesin suberectis, plus minusve persistentibus; antherae ca. 1.3 mm. longae, staminibus perianthio paulo brevioribus; bacca laete rubra ca. 8 mm. diam.—Guatemala: Dept. Huehuetenango: Growing on rocks, Cerro Pueblo Viejo, rocky slopes above La Libertad, alt. 1,900 meters, August 20, 1942, Julian A. Steyermark 51003 (type in Herb. Field Mus.). Dept. San Marcos: Hanging from a tree, Volcán de Tajumulco, Potrero Tojó, Finca El Porvenir, 1,300 meters, March, 1940, Steyermark 37655.

The second collection cited was determined by R. W. Emons as *Smilacina paniculata* Mart. & Gal., but it is in fruit only, and does

not exhibit the flower characters that distinguish the plant here described as a new species. *S. crassipes* differs from *S. paniculata* in having much larger and thick perianth segments, also in the very thick pedicels and branches of the narrow panicle.

MALVACEAE

Robinsonella cordata Rose & Baker, Gard. & For. 10: 244. f. 31. 1897. *Rebsamenia arborea* Conzatti, Gén. Veg. Mex. 1903.—Dr. T. H. Kearney recently wrote to the senior author of the present paper, inquiring about the identity of the genus *Rebsamenia* Conzatti, which, although described as a tree, is not mentioned in *Trees and Shrubs of Mexico*, having been overlooked by the author. As described, *Rebsamenia* consisted of a single species, based upon a collection by V. González and C. Conzatti from Cerro de San Felipe, Oaxaca, Mexico, March 7, 1898. Conzatti's description is sufficiently ample, its most significant phrases indicating that the plant described is a tree and that its flowers are blue, which among Mexican Malvaceae can apply only to the genus *Robinsonella*, described by Rose and Baker in 1897. In her excellent monograph of *Robinsonella* (Journ. Arnold Arb. 12: 49. 1931) Mrs. Eva M. Fling Rousch does not mention *Rebsamenia*, but it is clear that this is referable to *Robinsonella cordata*, which is cited there (p. 58) as having been collected on Cerro de San Felipe by González and Conzatti March 7, 1898 (no. 671). This no. 671 is doubtless the type collection of *Rebsamenia cordata*.

SAURAUIACEAE

Sauraia cuchumatanensis Standl. & Steyermark, sp. nov.—*Frutex* 1.5 m. altus, ramis crassis dense setis longis patentibus ferrugineis setoso-hirsutis; folia magna subcoriacea breviter petiolata, petiolis crassis 2–3.5 cm. longis dense setoso-hirsutis; lamina oblonga vel elliptico-oblonga 17–25 cm. longa 6.5–8.5 cm. lata acuminata, basin rotundatam versus paullo angustata, inaequaliter serrata, dentibus salientibus, supra sat dense setis ferrugineis basi bulbosis setoso-hirsuta, subtus paullo pallidior sparse ad nervos venasque setis rigidis ferrugineis setoso-hirsuta, venis insigniter elevatis et arcte reticulatis; inflorescentiae foliis duplo breviores vel interdum folia aequantes longipedunculatae, parvae et condensatae vel interdum laxe paniculatae atque 16 cm. longae et 12 cm. latae, rhachi ramisque dense pilis ferrugineis setoso-hirsutis, floribus magnis breviter longe pedicellatis; sepala dense pilis longis patentibus

ferrugineis basi bulbosis obtecta, in statu fructifero 8 mm. longa; petala alba rotundata ca. 9 mm. longa; antherae 2 mm. longae vel paullo ultra apice poris magnis dehiscentes; styli distincti.—Guatemala: Dept. Huehuetenango: Wet cloud forest, Cruz de Limón, between San Mateo Ixtatán and Nucá, Sierra de los Cuchumatanes, alt. 2,600–3,000 meters, July 31, 1942, Julian A. Steyermark 49810 (type in Herb. Field Mus.); Cerro Huitz, between Mimanhuitz and Yulhuitz, alt. 1,500–2,600 meters, July, 1942, Steyermark 48560.

In view of the wretched “monographic” account of this genus, it is inadvisable, probably, to propose further species until the status of those already described has been established. There is no group of tropical American plants more sadly in need of serious monographic study. Guatemalan plants of the genus suffered as much at the hands of Buscalioni as those of any other country, but we have been able to find names for most of the recognizable specific units represented by our rather ample material, and, fortunately, reduce to synonymy a number of the names that he proposed. There remain, however, three apparently distinct specific units for which we have been unable to find names among those proposed from Central America and Mexico, although it is quite possible that names for some of them may be found when order has been brought out of the jumble. *Saurauia cuchumatensis* is a high-mountain plant, noteworthy for its abundant setose-hirsute pubescence of long spreading ferruginous setae and for its large and thick, conspicuously reticulate-veined leaves, which are broadest at or near the middle rather than above the middle as in most related Central American species.

***Saurauia perseifolia* Standl. & Steyermark, sp. nov.**—Arbor 10-metralis, ramulis crassis dense stellato-pubescentibus vel tomentosis atque dense setis longis brunneis adscendentibus vel subadpressis setosis; folia majuscula membranacea, petiolis crassis ca. 2 cm. longis ut ramis indutis; lamina oblongo-obovata vel obovata 17–22 cm. longa 7.5–10 cm. lata acuta vel subacuta, basin anguste rotundatam versus aliquanto angustata, subintegra vel supra medium arcte serrulata, supra dense pilis patentibus vel subadpressis fulvis setosa, subtus paullo pallidior, densissime molliterque pilis patentibus fulvescentibus basi bulbosis setoso-pilosa; inflorescentiae pauciflorae densae usque ad 9 cm. longae longipedunculatae, pedunculis densissime breviter setosis et stellato-puberulis, pedicellis crassiusculis elongatis, floribus albis ca. 13 mm. latis vel paullo latioribus; sepala 4.5 mm. longa rotundo-ovata, apice obtusa vel rotundata, setis brevibus crassis puberulis dense furfuracea; petala late ovata vel

obovata apice obtusa vel rotundata, ca. 6 mm. longa, glabra; filamenta basi pilosa, antheris fere 2 mm. longis apice poris magnis dehiscentibus.—Guatemala: Dept. Izabal: Along Río Tameja, Cerro San Gil, alt. 50 meters, December 24, 1941, Julian A. Steyermark 41748 (type in Herb. Field Mus.).

This tree grows at or near sea level, an unusually low elevation for plants of this genus, at least in Central America. It is noteworthy for the large, thin, broad, mostly subentire leaves and very dense pubescence of slender, relatively soft, spreading, yellowish hairs.

Sauraia veneficorum Standl. & Steyermark, sp. nov.—Arbor ca. 6-metralis, ramulis petiolisque setis longis gracilibus rigidis patentibus vel subreflexis brunnescensibus densissime setosis, petiolis gracilibus 1.5–2 cm. longis; folii lamina obovato-oblonga vulgo 9–16 cm. longa et 4–6 cm. lata, apice acuta vel rotundata, basin subacutam vel anguste rotundatam versus sensim angustata, supra pilis longis gracilibus patentibus sparse setosa, subtus pilis longis gracilibus dense brunnescenti-setosa, inaequaliter serrata vel serrulata; inflorescentia laxa pauciflora graciliter longipedunculata, vulgo foliis duplo brevior vel brevior, interdum magis elongata, floribus albis 1.5 cm. latis vel latioribus crasse vel graciliter pedicellatis, pedicellis setis brunnescensibus densissime longisetosis; sepala ovalia vel rotundata 6–8 mm. longa, apice rotundata vel obtusissima, setis longis gracilibus patentibus brunnescensibus dense setosis; styli glabri distincti; fructus siccus ca. 1 cm. diam. globosa vel depresso-globosa, pilis longis laxis mollibus sparse pilosa.—Guatemala: Dept. Chiquimula: Middle slopes of Montaña Norte to El Jutal, on Cerro Brujo, south-east of Concepción de las Minas, alt. 1,700–2,000 meters, November 2, 1939, Julian A. Steyermark 31081 (type in Herb. Field Mus.); Cerro Tixixí, north of Jocotán, 500–1,500 meters, Steyermark 31626.

Here probably belongs also *W. R. Hatch & C. L. Wilson* 229 from Chicoyón, Cobán, Alta Verapaz. This species is related to *S. subalpina* Donn. Smith, in which the setae of the petioles are closely appressed rather than spreading.

PASSIFLORACEAE

Passiflora macrostemma Killip, sp. nov.—Glaberrima; stipulae falcato-subulatae; petoli eglandulosi; folia profunde bilobata, lobis erectis obtusis; pedunculi bini, bracteis setaceis; flores purpurei; corona 1-seriata, filamentis filiformibus; operculum subplanum,

erectum; limen cupuliforme erectum gynophorum cingens, margine divaricato.

Herbaceous vine, glabrous throughout; stem subangular; stipules falcate-subulate, 4 mm. long, subpersistent; petioles 1–1.5 cm. long, glandless; leaf blades membranous, sublustrous on both surfaces, rounded or subtruncate at the base, ocellate beneath, bilobed one-half to two-thirds their length, 1.5–4 cm. long along the midnerve, 4–9 cm. along the lateral nerves, 3–7 cm. between the apices of the lobes, the lobes erect or very slightly divaricate, 1.2–3 cm. wide, rounded, the sinus rounded or subtruncate; peduncles in pairs, 2–3 cm. long, divaricate; bracts setaceous, 2.5–3 mm. long, borne just below the base of the flower; flowers 3–4 cm. wide when expanded, the calyx tube broadly campanulate; sepals lanceolate, about 2 cm. long, 1 cm. wide at the base, obtuse, ecorniculate, greenish purple without, deep lavender within; petals oblong, about 1.5 cm. long, 4–5 mm. wide, obtuse, membranous, deep lavender; corona 1-ranked, the filaments numerous, filiform, 6–7 mm. long, erect; operculum membranous, erect, 4–5 mm. high, very slightly plicate, purple, green at the base; nectar ring none; limen about 3 mm. high, the base closely surrounding the gynophore, the margin spreading outward, entire; gynophore about 1 cm. long, rather stout; ovary subglobose.—Guatemala: Dept. Chiquimula: Volcán de Quezaltepeque, 3–4 miles northeast of Quezaltepeque, alt. 1,500–2,000 meters, November 8, 1939, Julian A. Steyermark 31519 (type in Herb. Field Mus.); from the same general vicinity, Steyermark 31281. Dept. Jalapa: Montaña Durazno, 2 miles east of San Pedro Pinula, alt. 1,400–1,900 meters, Steyermark 32985.

In the monograph of the American Passifloraceae (Field Mus. Bot. 19) this species would come in the subgenus *Plectostemma*, section Decaloba, series Organenses, where it is most nearly related to *P. salvadorensis*. The foliage of the two is very similar, though in *P. salvadorensis* the leaf lobes are more divergent and the blades are of a thinner texture. The petals are barely a quarter as long as the sepals in *P. salvadorensis*, the operculum is lower, the gynophore is longer and more slender, and the limen is merely a slightly elevated ring on the floor of the calyx tube.

LYTHRACEAE

Crenea patentinervis (Koehne) Standl., sp. nov. *C. surinamensis* (L. f.) Koehne, subsp. *patentinervis* Koehne, Bot. Jahrb. 3: 320. 1882.

This shrub of tidal swamps is known only from the Pacific coast of Colombia, *C. surinamensis*, the only other species of the genus having a rather wide range, from Colombia or perhaps Panama through the Guianas to Bahia in Brazil.

ERICACEAE

Vaccinium minarum Standl. & Steyerm., sp. nov.—Frutex vel arbuscula 3–4.5 m. alta ramosa, ramis gracilibus subteretibus fuscis vel brunnescentibus, novellis saepe rubescentibus puberulis cito glabratis sat dense foliatis; folia inter minora coriacea breviter petiolata plus minusve lucida, petiolo crasso 3–5 mm. longo minute puberulo vel glabro; lamina elliptico-oblonga, obovato-oblonga vel lanceolata 2.5–3.5 cm. longa 8–15 mm. lata obtusa vel apicem obtusum versus angustata, basi acuta vel cuneata, remote et sub-obsolete adpresso-crenata, supra viridis glabra, costa interdum subimpressa, subtus paullo pallidior glabra epunctata, costa crassa prominula, nervis lateralibus obsoletis vel prominulis paucis, venis obsoletis; racemi axillares brevissimi pauciflori foliis plus quam duplo breviores, pedicellis rubris 3–7 mm. longis infra medium bracteolatis puberulis; hypanthium 1.5 mm. longum pilosulum, sepalis 5 trianguli-acuminatis 1 mm. longis extus puberulis; corolla rosea 6 mm. longa 2 mm. lata extus albido-hispida, lobis 5 ovatis subacutis erectis ca. 1.3 mm. longis.—Guatemala: Dept. Zacapa: Middle and upper southern slopes of Volcán Gemelos, Sierra de las Minas, alt. 2,100–3,200 meters, January 26, 1942, Julian A. Steyermark 43295 (type in Herb. Field Mus.); Sierra de las Minas, between Loma El Picacho and Cerro de los Monos, 2,000–2,600 meters, Steyermark 42836.

The second collection cited was reported under the description of *Vaccinium haematinum* Standl. & Steyerm. (Field Mus. Bot. 28: 139, 1944) as probably referable to that species, but further material of the same plant and of *V. haematinum* that has come to hand shows that two distinct species are represented. In *V. haematinum* the flowers are glabrous, in *V. minarum* densely pubescent throughout, and there are obvious leaf differences.

MYRSINACEAE

Ardisia apoda Standl. & Steyerm., sp. nov.—Arbuscula 6-metralis, ramis crassis ferrugineo-furfuraceis vel glabratis subteretibus ut videtur dense foliatis; folia magna crasse membranacea sessilia

oblongo-oblanceolata, ca. 40 cm. longa et 9 cm. lata, longiacuminata, basin versus sensim anguste attenuata, basi ipsa late marginata anguste rotundata, integra, supra viridia glabra, nervis obscuris, subtus pallidiora brunnescens minute densiuscule ferrugineo-lepidota, dense fusco-punctata, costa gracili elevata, nervis lateralisbus tenerimis inconspicuis, venis vix prominulis arcte reticulatis; inflorescentia bene evoluta non visa, terminalis, ut videtur simpliciter ramosa pedunculata sparse furfuraceo-lepidota, floribus ut videtur breviter racemosis, pedicellis fructiferis fere 1 cm. longis crassiusculis sparse lepidotis; sepala rotundata 1.5 mm. longa ciliolata et suberosa, apice rotundata, grosse nigro-punctata; fructus globosus glaber 8 mm. diam. niger.—Guatemala: Dept. Izabal: Wet mixed forest, alt. 300–900 meters, Cerro San Gil, December 25, 1941, Julian A. Steyermark 41923 (type in Herb. Field Mus.).

It is unsatisfactory and probably inadvisable to describe a new species from this material, which is vague as to the form and lesser details of the inflorescence, although it shows the leaf characters well. It is clear, however, that the single collection represents a species of *Ardisia* quite unlike any other known from northern Central America, nor does it appear referable to any of the numerous species described from Costa Rica. Among Guatemalan species of *Ardisia* it is distinguished at once by its sessile leaves, the perhaps theoretical petioles being broadly margined to the very base, where the blade is narrowly rounded or very obtuse.

***Ardisia Vatteri* Standl. & Steyer., sp. nov.**—Frutex 1–3-metralis ut videtur dense ramosus, ramis brunneis primo sat dense ferrugineo-furfuraceis, cito glabratis, dense foliatis; folia parva breviter petiolata firme membranacea, petiolo lato submarginato 3–5 mm. longo minute sparseque lepidoto vel fere glabro; lamina anguste obovato-elliptica vel elliptica 2–4 cm. longa 8–18 mm. lata obtusa vel acuta, basi cuneata, grosse supra medium crenato-dentata vel rarius subintegra, supra glabra, costa subimpressa, nervis obsoletis, subtus vix pallidior sparse minute brunnescens-lepidota vel fere omnino glabra, costa gracili prominente, nervis lateralisbus inconspicuis; inflorescentia terminalis parva corymbiformis simpliciter ramosa vix ultra 2 cm. longa laxe pauciflora basi foliacea-bracteata, bracteis superioribus oblongis obtusis usque 4 mm. longis subpersistentibus, pedicellis gracilibus erectis 4–5 mm. longis dense glandulis sessilibus vel substipitatis obsitis; sepala lanceolato-oblonga 1.8 mm. longa obtusa grosse punctata glanduloso-ciliolata; petala viridescenti-alba 3 mm. longa glanduloso-ciliolata apicem

obtusum versus angustata; filamenta petalis bene longiora ca. 4 mm. longa, antheris late cordatis 0.7 mm. longis; fructus globosus 4 mm. diam. glaber grosse punctatus.—Guatemala: Dept. Huehuetenango: Cerro Huitz, between Mimanhuitz and Yulhuitz, Cerro de los Cuchumatanes, alt. 1,500–2,600 meters, July 14, 1942, Julian A. Steyermark 48558 (type in Herb. Field Mus.). Dept. Zacapa: Between Loma El Picacho and Cerro de los Monos, Sierra de las Minas, 2,000–2,600 meters, Steyermark 42834. Dept. Chiquimula: Cerro Brujo, 1,700–2,000 meters, Steyermark 31023 (sterile). Dept. El Progreso: Below summit of Volcán de Santa Luisa, Sierra de las Minas, about 3,000 meters, Steyermark 43555.

One of the most distinct species found thus far in all Central America, easily recognized by its leaves, which are smaller than those of any other species of the Central American region. It is named for Albert E. Vatter, Jr., of Glenview, Illinois, who accompanied the junior author on his second expedition to Guatemala, and capably performed the duties of chief assistant and photographer. Mr. Vatter's work contributed greatly to the success of that expedition.

SYMPLOCACEAE

Symplocos abietorum Standl. & Steyermark, sp. nov.—Frutex vel arbor 4.5–9 m. alta dense ramosa, ramis crassis primo sparse pilis brunnescentibus rigidis patentibus hispidulis, internodiis brevibus; folia parva petiolata rigide coriacea, petiolo crasso 4–5 mm. longo sparse hispidulo; lamina ovalis vel obovato-ovalis 3–4 cm. longa 1.5–2 cm. lata, apice rotundata vel obtusissima, basi obtusa vel rotundata, in sicco lutescens, manifeste repando-dentata, supra glabra lucida, venis impressis, subtus fere concolor, sparse pilis brunnescentibus subpatentibus pilosa, nervis lateralibus utroque latere ca. 6 gracilibus prominentibus, venis prominentibus arcte reticulatis; flores solitarii sessiles vel subsessiles, bracteis rotundo-ovatis obtusis apiculatis ca. 2 mm. longis ciliatis extus glabris; sepala apice fructus persistentia rotundo-ovata ut videtur glabra ciliata; fructus glaber late ellipsoideus ca. 2 cm. longus et 1.5 cm. latus basi et apice rotundatus sessilis.—Guatemala: Dept. Huehuetenango: Moist cool mixed cloud forest, with *Pinus Ayacahuite* and *Abies guatemalensis*, around Rancho de Teja, 3 miles west of San Mateo Ixtatán, Sierra de los Cuchumatanes, alt. 3,330 meters, July 9, 1942, Julian A. Steyermark 48482 (type in Herb. Field Mus.); also no. 48467, with the same data.

In its very small, thick-coriaceous, conspicuously denticulate leaves this is quite unlike any other species of *Symplocos* known from Mexico or northern Central America.

Symplocos culminicola Standl. & Steyerm., sp. nov.—Arbor 7–12-metralis ut videtur omnino glabra, ramis crassis subteretibus cinnamomeis vel ferrugineis, internodiis plus minusve elongatis; folia majuscula breviter petiolata firme coriacea in sicco lutescentia lucida, petiolo crasso 6–10 mm. longo; lamina elliptico-oblonga vel obovato-ovalis 6–14.5 cm. longa 3–6.5 cm. lata, apice late rotundata vel apicem obtusissimum versus paullo angustata, basi subacuta usque subrotundata, nervis supra prominulis, subtus pallidior, costa crassiuscula elevata, nervis lateralibus utroque latere 7–10 gracilibus prominentibus vel prominulis, venis prominulis et laxe reticulatis vel interdum obsoletis, marginibus integris vel subintegris interdum revolutis; inflorescentiae (perfectae non visae) pauciflorae vel interdum 1-florae pedunculatae, pedunculis 1-floris ca. 2 cm. longis, inflorescentiis ut videtur interdum subracemosis, floribus longipedicellatis, ramis pedicellisque crassis glabris; hypanthium glabrum, sepalis ovato-rotundatis in statu fructifero ca. 4 mm. longis ciliolatis apice rotundatis vel obtusissimis; fructus oblongo-ellipsoideus 2.5 cm. longus 1.5 cm. latus basi obtusus vel subrotundatus.—Guatemala: Dept. Chiquimula: Cloud forest, summit of Volcán de Quezaltepeque, alt. about 2,000 meters, November 8, 1939, Julian A. Steyermark 31489 (type in Herb. Field Mus.). Dept. El Progreso: Montaña Canahui, near upper limit of Finca Caieta, Sierra de las Minas, 2,300 meters, Steyermark 43808; hills north of Finca Piamente, in cloud forest near summit of Volcán de Santa Luisa, alt. 3,200 meters, Steyermark 43504.

It is possible that two species are represented by the material cited, but until more ample material, with flowers, has been collected, it seems preferable to treat the three collections as representing a single species. In foliage characters *S. culminicola* somewhat resembles *S. flavifolia* Lundell of Chiapas, but that has less obtuse, usually undulate or crenate leaves and much smaller fruits.

Symplocos Vatteri Standl. & Steyerm., sp. nov.—Arbor, ramulis gracilibus brunneis dense pilis sordidis vel brunnescensibus sericeis vel adpresso-pilosis; folia modica breviter petiolata chartacea, petiolo crasso 6–15 mm. longo dense piloso; lamina elliptico-oblonga 9–14 cm. longa 4.5–5.5 cm. lata acuminata, basi rotundata vel late obtusa et interdum abrupte breviter decurrentis, supra viridis sparse

pilis longis laxis pallidis pilosa vel glabrata, sublucida, nervis venisque prominulis sed vix conspicuis, integra, subtus multo pallidior et brunnescens, laxe sericea, costa gracili elevata, nervis lateralibus utroque latere ca. 13 prominentibus, venis prominulis laxe reticulatis; pedunculi axillares 1-flori vel rare 2-flori 2-4 cm. longi dense sordido-sericei vel subtomentosi graciles; sepala suborbicularia extus densissime pilis longis albidis vel ochraceis sericea, apice rotundata; corolla pallide purpurea, extus densissime pilis longis albis sericea, fere 2 cm. longa, lobis obovato-rotundatis apice late rotundatis, intus glabris, denticulatis vel erosionis; stamina numerosissima pauciseriata corollam fere aequantia, filamentis crassis minute papillosis, antheris vix 0.7 mm. longis.—Guatemala: Dept. Huehuetenango: Moist cool mixed cloud forest with *Pinus Ayacahuite* and *Abies guatemalensis*, around Rancho de Teja, 3 miles west of San Mateo Ixtatán, Sierra de los Cuchumatanes, alt. 3,330 meters, July 9, 1942, Julian A. Steyermark 48463 (type in Herb. Field Mus.).

From all other *Symplocos* species of Mexico and northern Central America this is distinguished at once by its unusually large flowers and by the greatly elongate, 1-flowered peduncles. It is a pleasure to dedicate this species to Albert E. Vatter, Jr., who was especially interested in the flora of the Sierra de los Cuchumatanes.

LOGANIACEAE

Buddleia euryphylla Standl. & Steyermark, sp. nov.—Arbor 7-15-metralis, ramis crassis obtuse tetragonis dense stellato-tomentosis, tomento sublaxo brunnescente; folia magna petiolata membranacea, petiolo crasso 3-7 cm. longo laxe tomentoso; lamina late ovata vel elliptico-ovata 15-25 cm. longa et 9.5-15 cm. lata vel ultra, subacuta usque breviter acuminata, basi late rotundata usque acuta non decurrens, integra vel undulata, supra viridis in statu adulto fere omnino glabra, nervis venisque inconspicuis, subtus pallidior atque brunnescens, ubique dense tomentosa, tomento e pilis inaequalibus mollibus sublaxis non adpressis composito, costa crassa elevata, nervis lateralibus utroque latere ca. 12 prominentibus, nervis vix prominulis laxe reticulatis; inflorescentiae paniculatae magnae pedunculatae interdum 30 cm. longae et fere aequilatae repetitive ramosae, laxae, ubique tomento laxe e pilis ramosis composito dense indutae, floribus subcapitatis, capitulis laxe cymosopaniculatis breviter pedunculatis paucifloris; calyx 3 mm. longus dense stellato-tomentosus, dentibus late triangularibus obtusis; corolla flava 4 mm. longa, lobis 4 orbiculatis extus dense stellato-

tomentulosis, intus basi sparse hispidulis.—Guatemala: Dept. El Progreso: In ravine, Sierra de las Minas, between Finca Piamonte and top of Montaña Piamonte, along Joya Pacayal, alt. 2,500–3,000 meters, February 7, 1942, Julian A. Steyermark 43628 (type in Herb. Field Mus.); Sierra de las Minas, between El Jute de Cobana and Finca Piamonte, 1,400–2,400 meters, Steyermark 43377 (sterile).

The relationship of this plant is obviously with *B. Skutchii* Morton, a common species of the Guatemalan mountains, but unknown in the Oriente. It differs from *B. euryphylla* in its much smaller flowers, small many-flowered heads, and usually much smaller leaves.

ASCLEPIADACEAE

Asclepias Woodsoniana Standl. & Steyerm., sp. nov.—Herba perennis erecta, caule gracili subsparse foliato bifarie albido-pubescente; folia crassiuscula breviter petiolata opposita, petiolo crassiusculo 3–5 mm. longo glabro; lamina fere linearis 4–8 mm. lata e basi subtruncata fere subhastata sensim apicem acutum versus attenuata 5.5–11 cm. longa utrinque glabra vel sparsissime puberula, 1-nervia, subglaucens; umbellae apice caulis et in axillis foliorum supremis 2–4, 1.5–3.5 cm. longe pedunculatae, ca. 12-florae, pedicellis gracilibus 10–14 mm. longis griseo-puberulis; calycis lobi oblongi acuti usque ad 2 mm. longi puberuli; corolla ut videtur pallide viridis 4.5 mm. longa glabra, lobis latis obtusis reflexis; columna staminalis crassa fere 1 mm. longa; foliola coronae ovata obtusa basi contracta et breviter unguiculata subcucullata; antherae 2.3 mm. longae apice albo-scariosae; corniculi coronae breviter exserti; folliculi non visi.—Guatemala: Dept. Jutiapa: Salt flats, potreros between Trapiche Vargas and Asunción Mita, alt. about 500 meters, November 15, 1939, Julian A. Steyermark 31781 (type in Herb. Field Mus.).

The nearest relationship of this species is not obvious, but of the Central American species it suggests only *A. rosea* HBK. That, however, has much narrower leaves with acute or attenuate, sessile bases, and differs in numerous other respects. *A. Woodsoniana* has been checked with all the species recorded from Mexico, but none of them agree at all closely with it. It is named for Dr. Robert E. Woodson, Jr., to whom we are much obligated for determinations of many of our Guatemalan Asclepiadaceae.

Cynanchum stenomeres Standl. & Steyerm., sp. nov.—Scandens herbacea vel suffrutescens, caulis interdum 2 m. longis

gracillimus obscure bifarie puberulis vel glabris pallide viridibus interdum purpurascensibus, internodiis plerumque foliis longioribus; folia crasse membranacea penninervia breviter petiolata glabra vel sparse minute obscureque ad venas incurvo-puberula, petiolo gracili 4–5 mm. longo; lamina linear-lanceolata 3–6 cm. longa 4–7 mm. lata longe anguste attenuata, basi obtusa vel acuta, supra intense viridis, costa nervisque interdum impressis, subtus multo pallidior, costa prominente, nervis lateralibus tenerrimis obscuris; inflorescentiae umbelliformes axillares ca. 10-florae pedunculatae, pedunculo gracili usque ad 8 mm. longo vulgo breviore, pedicellis glabris vel sparse puberulis 2.5–4 mm. longis; flores albi fragrantes ca. 4 mm. longi; calycis lobi ovato-oblongi minuti obtusi dorso sparse minuteque puberuli vel glabri; corolla in alabastro oblongo-ovoidea vel oblonga apice obtusa, profunde lobata, lobis lanceolato-oblongis vel oblongo-linearibus saepius prope basin angustatis, extus glabris intus dense albo-pilosulis; gynostegium longistipitatum, stipite calyce duplo longiore, coronae lobis e basi parva anguste ovoidea anguste filiformi-attenuatis corollae lobos fere aequantibus; stigma apice breviter rostratum, rostro appendicibus antherarum vix longiore.—British Honduras: All Pines, open places, at sea level, February 5, *William A. Schipp* 674 (type in Herb. Field Mus.); El Cayo District, mountain pine ridge, San Agustín, in pimento palm grove, in 1936, *C. L. Lundell* 6656; Gracie Rock, Sibun River, *Percy H. Gentle* 1755; on bushes in broken ridge, 8 miles northeast of Boomtown, *Hugh O'Neill* 8660.

In the present confused state of this genus it is difficult to decide what the relationship of this species may be, but it is clearly unlike any species of Mexico, Central America, and the West Indies of which there is material at hand for comparison. The several collections cited have all been determined as *Metastelma pedunculare* Dcne., described from Quezaltenango, Guatemala, and probably synonymous with *Cynanchum Schlechtendalii*. All forms of that species differ obviously in their relatively and usually absolutely short and broad, broad-based leaves that never are long-attenuate at the apex. There are also important differences in flower structure.

While we do not care to make miscellaneous new combinations in the genus *Cynanchum*, to which *Metastelma* is quite properly reduced by Woodson in his revolutionary but apparently excellent realignment of the American genera of Asclepiadaceae, the following new names are necessary for treatment of the few Guatemalan species of *Cynanchum*.

Cynanchum chiapense (Gray) Standl. & Steyerm., comb. nov.
Metastelma chiapense Gray, Proc. Amer. Acad. 21: 897. 1886.

Cynanchum collinum (Blake) Standl. & Steyerm., comb. nov.
Metastelma collinum Blake, Contr. U. S. Nat. Herb. 24: 19. 1929.

Cynanchum Schlechtendalii (Dcne.) Standl. & Steyerm., comb. nov. *Metastelma parviflorum* Schlecht. Linnaea 6: 731. 1831, not R. Br., 1809. *M. Schlechtendalii* Dcne. in DC. Prodr. 8: 513. 1844. *M. pedunculare* Dcne. op. cit. 514, syn. nov. *M. decipiens* Pittier, Contr. U. S. Nat. Herb. 13: 97. f. 4. 1910, syn. nov.—Perhaps we are in error in reducing to synonymy the two names cited here, but there are no obvious characters by which the two species, based on Guatemalan material, can be separated from *C. Schlechtendalii*. Decaisne does not suggest any important differences between his two species, and Pittier in separating *M. decipiens* relied only upon Decaisne's descriptions. We have seen type material of all three of these species.

Marsdenia blepharodes Standl. & Steyerm., sp. nov.—Scandens suffruticosa, caulis teretibus gracilibus, in statu juvenili sparse puberulis cito glabrat; folia inter minora breviter petiolata membranacea, petiolo gracili 6–15 mm. longo glabro vel glabrat; lamina oblongo-lanceolata 7.5–10.5 cm. longa 2–2.5 cm. lata acuminata vel longiacuminata, basin versus longiattenuata, glabra, subtus paullo pallidior, nervis lateralibus utroque latere vulgo 3 subtus prominentibus; inflorescentia axillaris sessilis multiflora densa ca. 1.5 cm. diam., pedicellis crassiusculis 4–5 mm. longis sparse puberulis; calyx 2.5–3 mm. longus extus dense albido-strigosus ad medium 5-lobus, lobis ovalibus apice rotundatis dense ciliatis; corolla intense purpurascens extus glabra 4.5 mm. longa, lobis 5 late oblongis apice obtusissimis intus dense papilloso-puberulis tubo paullo longioribus; coronae squamae late rhombo-ovatae vix ultra 1 mm. longae; stigma apice planum vel subplanum.—Guatemala: Dept. Quezaltenango: Climbing on tree fern bordering forest, San Juan Patzulín, alt. about 1,500 meters, January 6, 1940, Julian A. Steyermark 33615 (type in Herb. Field Mus.).

This evidently is related to *M. mayana* Lundell, of British Honduras and Guatemala, but in that the lateral nerves of the leaves are more numerous and the calyx lobes are glabrous dorsally, while the lobes of the corolla are shorter than the tube.

VERBENACEAE

Aegiphila hoffmannioides Standl. & Steyermark, sp. nov.—
Frutex 1.5–2.5 m. altus, ramis crassiusculis ad nodos aliquanto dilatatis pallide ferrugineis glabris, internodiis 1.5–2 cm. longis; folia modica graciliter petiolata crasse herbacea, petiolo 2–3.5 cm. longo glabro; lamina elliptica vulgo 10–17 cm. longa vel ultra, 5–7.5 cm. lata, subabrupte longiuscule acuminata, basi acuta vel acuminata, glabra, supra in sicco viridis opaca, subtus brunnescens, costa crassiuscula subtus prominente, nervis lateralibus utroque latere ca. 8 arcuatis angulo lato adscendentibus prominentibus, venis inconspicuis; inflorescentiae axillares umbelliformes plerumque triflorae petiolis breviores, pedunculo ca. 6 mm. longo gracili, pedicellis minute puberulis 4–5 mm. longis; calyx glaber turbinatus truncatus 3–4 mm. altus atque aequilatus; corolla flava ca. 7–8 mm. longa extus glabra, tubo brevi crasso, lobis paullo inaequalibus lanceolato-oblongis obtusis tubo bene longioribus.—Guatemala: Dept. Huehuetenango: Near Maxbal, Sierra de los Cuchumatanes, about 17 miles north of Barillas, alt. 1,500 meters, July 15–16, 1942, Julian A. Steyermark 48843 (type in Herb. Field Mus.).

In gross characters this species resembles closely *A. pauciflora* Standl. of British Honduras, but in that the calyx is abundantly strigose on the outer surface, rather than glabrous.

Clerodendron mimicum Standl. & Steyermark, sp. nov.—Frutex epiphyticus ramosus, ramis crassis subteretibus ochraceis vel brunnescentibus, sparse villoso-hirsutis, internodiis foliis multo brevioribus; folia opposita breviter petiolata subcoriacea lucida, petiolo crassiusculo 5–10 mm. longo villoso-piloso vel glabratu; lamina elliptica vel elliptico-obovata, interdum subrhomboidata, 5–12 cm. longa 3–7 cm. lata, obtusa vel subacuta, basi cuneata et saepe decurrentis, supra glabra, costa nervisque impressis, subtus fere concolor, in axillis nervorum sparse villoso-pilosa, costa elevata, nervis lateralibus utroque latere vulgo 4 gracilibus elevatis angulo semi-recto adscendentibus arcuatis, venis inconspicuis laxissime reticulatis; flores axillares solitarii, vel pauci et fasciculati, pedicellis gracilibus fere rectis fere 2.5 cm. longis sparse breviter pilosis; calyx lobis inclusis 9–11 mm. longus sparsissime pilosulus vel fere glaber, tubo campanulato apice ca. 5 mm. lato subtruncato, lobis approximatis lineari-lanceolatis basi paullo dilatatis apicem versus sensim attenuatis erectis vel adscendentibus tubo subaequalibus; corolla intense purpureo-rubra extus glabra, tubo lato recto ca. 22 mm. longo

5 mm. lato sursum vix dilatato, lobis rotundo-ovatis apice rotundatis 3.5 mm. longis ciliolatis; stamna inclusa.—Guatemala: Dept. Huehuetenango: Cerro Huitz, between Mimanhuitz and Yulhuitz, Sierra de los Cuchumatanes, alt. 1,500–2,600 meters, July 14, 1942, Julian A. Steyermark 48631 (type in Herb. Field Mus.). Dept. Zacapa: Volcán Gemelos, Sierra de las Minas, 2,100–3,200 meters, January, 1942, Steyermark 43267; Sierra de las Minas, between Loma El Picacho and Cerro de los Monos, 2,000–2,600 meters, Steyermark 42832.

In general appearance this species closely resembles *C. pithecoicum* Standl. & Steyermark, which grows in Guatemala in the departments of Suchitepéquez and Quetzaltenango. It may be too closely related to that species, which it resembles in every respect except the calyx, which is decidedly different. The calyx in *C. pithecoicum* is barely half as large and has very short lobes that are widely separated at the base.

SOLANACEAE

Lycianthes barbatula Standl. & Steyermark, sp. nov.—Frutex 3–4.5 m. altus, ramis gracilibus glabris; folia crasse membranacea breviter petiolata, paris maxime inaequalia, petiolo gracili glabro 7–20 mm. longo; lamina foliorum majorum elliptico-oblonga vel ovato-oblonga 7–16 cm. longa 2.8–6.5 cm. lata, acuta vel acuminata, apice ipso obtuso, basi suboblique acuta vel obtusa, supra viridis glabra, subtus vix pallidior secus costam sparse denseve pilis sordidis longiusculis barbata, aliter glabra, nervis lateralibus utroque latere 6–7; folia minora paris breviter petiolata suborbicularia usque late ovata vel rotundo-ovata plerumque 1–3 cm. longa et fere aequilata, obtusa vel apice rotundata, basi rotundata; flores axillares fasciculati pauci, pedicellis gracillimis 2–2.5 cm. longis glabris; calyx late campanulatus 2.5 mm. longus glaber fere ad apicem appendicibus 5 linearibus vel filiformibus viridibus 3 mm. longis vel ultra onustus; corolla late campanulata alba ca. 12 mm. longa glabra; stamna inaequalia, filamentis glabris antheris paullo longioribus, antheris 3 mm. longis oblongis; bacca globosa alba fere 1 cm. diam.—Guatemala: Dept. Suchitepéquez: Volcán de Santa Clara, between Finca El Naranjo and upper slopes, alt. 1,250–2,650 meters, May 23, 1942, Julian A. Steyermark 46653 (type in Herb. Field Mus.). Dept. Chimaltenango: Slopes of Volcán de Fuego, above Finca Montevideo, along Barranco Espinazo, 1,200–1,600 meters, September, 1942, Steyermark 52055.

An apparently well-marked species, not particularly close to any known previously from Guatemala, but related to the following new species.

***Lycianthes orogenes* Standl. & Steyermark, sp. nov.**—Frutex vel arbuscula 1.5–3 m. alta et ultra glabra, ramis gracilibus; folia membranacea vel crasse membranacea petiolata parvis valde inaequalia, petiolo 7–25 mm. longo; lamina foliorum majorum oblongo-elliptica vel elliptico-lanceolata vulgo 7–18 cm. longa et 1.5–5 cm. lata, acuminata vel longi-acuminata, acumine ipso obtuso, basi cuneato-attenuata, subitus paullo pallidior, nervis lateralibus utroque latere ca. 9; folia minora similia sed multo breviora 1.5–4.5 cm. longa, interdum ovata vel lanceolato-ovata; flores axillares fasciculati pauci, pedicellis gracillimis plerumque 2–2.5 cm. longis; calyx turbinato-campanulatus 3 mm. longus basi acutus truncatus, prope apicem appendicibus 5 erectis viridibus linearibus vix ultra 1 mm. longis onustus; corolla alba late campanulata 7 mm. longa et ultra glabra; stamina aequalia; fructus globosus ca. 8 mm. diam.—Guatemala: Dept. Chimaltenango: Southwestern slopes of Volcán de Fuego, above Finca Montevideo, along Barranco Espinazo, alt. 1,200–1,600 meters, September 20, 1942, Julian A. Steyermark 52104 (type in Herb. Field Mus.); Panajabal, 1,350 meters, January, 1939, Standley 62118, 62136. Dept. Quezaltenango: Volcán de Zunil, at and above Aguas Amargas, February, 1939, Standley 65304; along old road between Finca Pirineos and Patzulín, 1,200–1,400 meters, February, 1941, Standley 87146, 86997, 87013.

There are referred here also several other collections, from the departments of Quezaltenango and Sacatepéquez. The shrub is common in the central and western mountains of Guatemala, but we have found it in flower but once. It is related to *L. barbatula*, described above, but seems constantly different in its quite glabrous leaves and much shorter calyx appendages.

***Physalis amphitricha* (Bitter) Standl. & Steyermark, comb. nov.** *Saracha amphitricha* Bitter, Repert. Sp. Nov. 20: 362. 1924.—The type of this species is *Bernoulli & Cario* 2335, collected in Guatemala between San Martín Sacatepéquez and Las Mercedes, Quezaltenango. We have not seen type material, but Bitter's description evidently relates to a plant common in moist or wet, mountain forests of the departments of Quezaltenango and San Marcos. In Guatemala we have made more than 20 collections of it, which illustrate its slight variations. It is represented also by *Purpus*

6671 from Boquerón, Chiapas, Mexico. Bitter had only flowering branches, and so was uncertain as to the generic position of the plant, but he placed it in *Saracha*, suggesting, however, that it might actually represent a distinct and new genus, for which he suggested but did not properly publish the name *Heterosaracha*. He would have been greatly surprised if he had seen the flowers develop into fruits, for the fruits are exactly those of *Physalis*, and in no way resemble fruits of *Saracha*.

The ample material of this and related forms now at hand represents a group of plants common in various regions of Guatemala. We are describing on the following pages three segregates that seem to represent valid species, differing constantly in the pubescence and lobing of the calyx. There is some basis for treating these plants as a distinct and new genus. They are all very large, tall, coarse, soft-stemmed herbs that in habit and general appearance, when growing, do not at all suggest *Physalis*. The corolla is rotate or nearly so, deeply lobate and not plicate, densely pubescent outside and within, and densely lanate or tomentose in the throat. The flowers are all or nearly all fasciculate, while in *Physalis* proper they are solitary. It would be safe and reasonable to treat these species as constituting a separate genus if it were not for a group of three other species that are more or less intermediate between them and typical *Physalis*. The latter species are *Physalis melanocystis* (Robinson) Bitter of San Luis Potosí, *P. mayana* Standl. of the Yucatan Peninsula and Veracruz, and, probably, *P. porphyrophysa* Donn. Smith, of Zacapa, Guatemala, the last known only from fruiting specimens. *P. porphyrophysa* is a woody vine, and the other two species mentioned also are decidedly ligneous. All these three species have fasciculate flowers, but the corolla is somewhat campanulate (so far as it is known), and not at all like that of *Physalis amphitricha*. *P. melanocystis* was referred by Robinson with question to *Withania*, an Old World genus from which it differs little and perhaps only in geographic distribution. Although the shape of the corolla has been much used as a basis for separating genera in the Solanaceae, and is a quite satisfactory character in some cases, it is highly variable and not always dependable. It therefore seems necessary, for the present at least, to leave all the species mentioned here in *Physalis*. They could be separated on the basis of their fasciculate rather than solitary flowers, but this alone does not seem sufficient basis for a generic segregation, although it is more definite than the characters on which many of the genera of Solanaceae are based, and probably does indicate a homogeneous group of some taxonomic importance.

Physalis amica Standl. & Steyermark, sp. nov.—Herba ramosa erecta ca. 1.5 m. alta, caulis crassiusculis dense sordido-villosus; folia petiolata herbacea, petiolo 7–12 mm. longo dense villosulo; lamina ovata vel elliptico-ovata interdum rhombo-ovata vulgo 4–8 cm. longa atque 2–4.5 cm. lata, acuta vel breviter acuminata, basi plus minusve obliqua acuta vel abrupte acuta, angulato-dentata vel subintegra, utrinque sat dense pilis crassiusculis plurilocularibus villosa; pedicelli fasciculati ca. 8 mm. longi superne incrassati dense breviter villosuli; calyx 6–8 mm. longus campanulatus dense breviterque villosulus fere ad medium 5-lobus, lobis ovatis acutis vel acuminatis; corolla pallide luteo-viridis ca. 2.5 cm. lata fere rotata, tubo lato brevi, extus intusque dense viscido-puberula, fauce dense villosa vel tomentosa, profunde 5-loba, lobis ovatis obtusis vel acutis; filamenta longa gracilia superne glabra, antheris filamentis duplo brevioribus ca. 3 mm. longis oblongis; calyx fructifer non visus.—Guatemala: Dept. San Marcos: Along stream in moist or wet forest, 2,500–3,000 meters, between La Vega ridge and northeast slopes of Volcán de Tacaná, along Río Vega, February 20, 1940, Julian A. Steyermark 36175 (type in Herb. Field Mus.).

Apparently a rare plant, and only one collection of it was made. In most respects it is like *P. amphitricha* but is distinguished by its densely villosulous rather than glabrous calyx, and by the abundant pubescence on all vegetative parts.

Physalis calidaria Standl. & Steyermark, sp. nov.—Herba 1–1.5 m. alta erecta vel laxa et adscendens ramosa, caulis gracilis dense breviterque villosulis; folia petiolata membranacea, petiolo vulgo 1–2 cm. longo dense villosulo; lamina ovata vel elliptica 6–17 cm. longa 3–8 cm. lata acuminata vel longiacuminata, basi acuta vel obtusa et abrupte acuminata vel decurrentis, supra viridis sparse villosa, subtus pallidior sat dense villosa; inflorescentiae umbelliformes pauciflorae sessiles vel brevissime pedunculatae, pedicellis gracillimis 10–15 mm. longis, villosulis vel puberulis; calyx late campanulatus ca. 3 mm. altus et 5 mm. latus dense viscido-puberulus vel villosulus, margine subintegro vel brevissime 5-lobo, lobis latissime rotundatis vel subtruncatis; corolla rotata pallide luteo-virescens ca. 2.5 cm. lata extus intusque dense viscido-puberula, fauce dense villoso-lanosa, profunde 5-loba, lobis late ovatis ca. 8 mm. longis atque 6 mm. latis obtusis vel acutiusculis; filamenta gracillima glabra antheris fere duplo longiora, antheris ovalibus fere 3 mm. longis; calyx fructifer ca. 2.5 cm. latus et aequilongus obtuse 5-angulatus basi depresso glaber vel glabratu, pallide viridis, conspicue retic-

ulato-venosus, venis elevatis.—Guatemala: Dept. Quezaltenango: Fuentes Georginas, west slope of Volcán de Zunil, in wet mixed forest, alt. about 2,850 meters, March 4, 1939, *Paul C. Standley* 67488 (type in Herb. Field Mus.); same locality, 2,300–2,500 meters, February 3, 1941, *Standley* 85932, 85892, 85885. Dept. San Marcos: Volcán de Tajumulco, between Todos Santos and Finca El Porvenir, 1,300–3,000 meters, March, 1940, *Steyermark* 36988.

From *P. amphitricha* this species differs in its densely pubescent and subtruncate calyx; from *P. amica* in its subtruncate calyx.

Physalis chimalteca Standl. & Steyermark, sp. nov.—*Herba vel suffrutex ramosus erectus vel adscendens 1.5–2.5 m. altus, caulis sparse pilis laxis vel subadpressis villosis vel fere glabris; folia petiolata membranacea, petiolo vulgo 1.5–4 cm. longo sparse villosulo vel glabro; lamina ovata usque elliptica vel late elliptica vulgo 5–11 cm. longa atque 3–8.5 cm. lata acuta usque acuminata, apice ipso obtuso, basi acuta usque obtusa vel subrotundata, plus minusve angulata vel undulato-dentata vel subintegra, supra viridis sparsissime pilis brevibus crassis villosula, subtus pallidior, sparse pilis crassis plurilocularibus praesertim prope costam villosula; inflorescentiae umbelliformes pauciflorae sessiles, pedicellis plerumque ca. 12 mm. longis superne incrassatis glabris vel glabratris; calyx late campanulatus ca. 4.5 mm. altus et 6.5 mm. latus glaber vel glabratius, margine ciliato undulato 5-lobatus, lobis brevissimis apiculatis vel subtruncatis; corolla pallide lutescenti-viridis vel albido-viridescens ca. 2 cm. lata rotata extus intusque dense viscido-puberula, fauce dense villosolanosa, ca. 15 mm. longa, profunde 5-loba, lobis ovatis vel triangularibus acutis vel acuminatis; filamenta antheris plus quam duplo longiora glabra, antheris ovalibus 2.5 mm. longis vel paullo ultra; calyx fructifer non visus.*—Guatemala: Dept. Chimaltenango: Slopes of Volcán de Acatenango, above Las Calderas, in dense wet *Chiranthodendron* forest, alt. 2,400–2,700 meters, January 3, 1939, *Paul C. Standley* 61803 (type in Herb. Field Mus.), 61965; Volcán de Acatenango, 2,400 meters, February, 1907, *W. A. Kellerman* 6610. Dept. Quiché: San Miguel Uspantán, April, 1892, *Heyde & Lux* 3435 (probably referable here).

Resembling *P. amphitricha* in its glabrous calyx but in that species the calyx is deeply lobate, with ovate lobes. Both *P. amica* and *P. calidaria* are distinguished by their densely pubescent calyces.

Solanum alpicum Standl. & Steyermark, sp. nov.—*Herba perennis, interdum acaulis, caulis interdum elongatis et usque ad 25 cm.*

longis, solitariis vel pluribus, sparse pilis longis laxis albis plurilocularibus villosis, radicibus sine dubio tuberiferis, tuberibus non visis; folia pinnata vel infima radicalia simplicia, 3–5-foliolata longipetiolata vulgo 5–10 cm. longa, interdum in plantis caulescentibus multo longiora, rhachi nuda vel anguste alata sparse albo-villosa; foliola valde inaequalia, inferioribus sensim decrescentibus, foliolo terminali elliptico, ovali vel elliptico-ovato 3–11 cm. longo et 1.5–6 cm. lato, lateralibus duplo brevioribus vel minoribus, foliolis omnibus membranaceis integris, obtusis vel acutis, utrinque subtus densius pilis longis albidis plurilocularibus crassiusculis villosis, basi acutis vel subrotundatis obtusisve atque abrupte contractis, sessilibus; inflorescentiae 1 pauciflorae foliis breviores, pedicellis gracillimis usque ad 3.5 cm. longis, vulgo duplo brevioribus, dense albo-villosis, supra medium articulatis; calyx ca. 4 mm. longus viridis profunde lobatus, sat dense villosus, segmentis ovatis acuminatis; corolla purpurea vel alba 15–18 mm. longa extus sparse albo-villosa, limbo ut videtur 5-angulato; antherae luteae; bacca globosa glabra 1–1.5 cm. diam. apice late rotundata. — Guatemala: Dept. Huehuetenango: Cerro Chémal, summit of Sierra de los Cuchumatanes, alt. 3,700–3,800 meters, August 8, 1942, Julian A. Steyermark 50303 (type in Herb. Field Mus.); vicinity of Chémal, 3,700 meters, August 8, 1942, Steyermark 50247; near Chémal, 3,300 meters, September, 1941, John R. Johnston 1969; alpine areas, vicinity of Tunimá, Sierra de los Cuchumatanes, July, 1942, Steyermark 48369.

This plant is obviously related to *S. demissum* Lindl., a species of the mountains of central and southern Mexico, and it is not certain that the two are distinct. The Mexican material available for comparison is unsatisfactory, but, if one may depend upon the descriptions of *S. demissum*, the Guatemalan plant is distinct, as one might expect from its isolated range and the very high elevation at which it occurs. Three of the collections consist of plants that are acaulescent or nearly so, while one consists of luxuriant caulescent plants about 25 cm. high or larger, which probably grew in a protected place. The region where the species grows is an alpine one, where below-freezing temperatures are common during the winter months of the North, and probably throughout the year. The plant is, of course, a relative of *Solanum tuberosum*, and it is curious to note that in the Chémal region the only agriculture is potato growing. This, however, is a coincidence. While most of the leaves in *S. alpicum* are pinnate, the earliest leaves of the rosette-like clusters are simple and long-petiolate, the succeeding ones bearing only a few very greatly reduced leaflets on the upper part of the petiole.

Solanum fontium Standl. & Steyerm., sp. nov.—Frutex 2–3-metralis omnino glaber ramosus, ramis vetustioribus insigniter elevato-lenticellatis; folia modica petiolata membranacea solitaria vel 2–3-nata integra, petiolo crassiusculo 1–3 cm. longo; lamina lanceolato-oblonga medio vel prope basin latissima 7.5–20 cm. longa, 3–7 cm. lata, acuminata, basi inaequali obtusa vel subrotundata vel acuta, subtus non barbata, nervis lateralibus utroque latere ca. 11 arcuatis; inflorescentia oppositifolia pedunculata, vulgo furcata sed interdum simpliciter umbellata, pauci- vel multiflora, pedicellis glabris usque 15 mm. longis; calyx campanulatus 3 mm. longus glaber brevissime lobatus vel dentatus, dentibus obtusis; corolla alba extus glabra ca. 6–7 mm. longa fere ad basin lobata, lobis ovato-oblongis obtusis; antherae late oblongae 3 mm. longae; ovarium glabrum; baccae non visae.—Guatemala: Dept. Quezaltenango: Wet forest, Fuentes Georginas, western slope of Volcán de Zunil, alt. 2,850 meters, March 4, 1939, *Paul C. Standley* 67473 (type in Herb. Field Mus.); also no. 67492 with the same data; and from the same locality, February, 1941, *Standley* 85928. Dept. San Marcos: Wet forest along road above Barranco Eminencia, alt. 2,700 meters, *Standley* 68502.

Related, evidently, to *S. Rovirosanum* Donn. Smith, but apparently fully distinct in its narrow leaves of different shape, with much more acute or acuminate apex.

Solanum huehuetecum Standl. & Steyerm., sp. nov.—Fruticulus ca. 30 cm. altus ramosus, inferne lignosus superne herbaceus, ramis gracilibus sparse denseve stellato-pubescentibus; folia alterna vel opposita subaequalia petiolata membranacea, petiolo gracillimo 7–15 mm. longo stellato-pubescente; lamina ovata vel lanceolato-ovata, interdum deltoideo-ovata, vulgo 3–5 cm. longa et 1–2 cm. lata, acuta vel acuminata, apice ipso obtuso, basi rotundata vel obtusissima, supra viridis sparse pilis brevibus simplicibus pilosa, subtus concolor sparse vel dense pilis albidis stipitatis pauciradiatis stellato-pilosa, nervis lateralibus utroque latere 4–5, integra; inflorescentiae extra-axillares pauciflorae sessiles vel subsessiles, pedicellis gracillimis plerumque 2–2.5 cm. longis sparsissime stellato-pubescentibus vel glabris; calyx viridis campanulatus basi acutus 3 mm. longus sparse stellato-puberulus fere ad medium 5-lobatus, lobis ovatis obtusis vel acutis dorso 1-costatis; corolla alba stellato-campanulata extus glabra ut videtur ca. 6–7 mm. longa (perfecta non visa) ad medium 5-loba, lobis angustis attenuatis; antherae fere sessiles oblongae ca. 3.5 mm. longae, antheris omnibus aequalibus;

bacca globosa glabra ca. 8 mm. diam., apice late rotundata.—Guatemala: Dept. Huehuetenango: Above Democracia on trail to Jutal, alt. 1,000 meters, August 23, 1942, Julian A. Steyermark 51039 (type in Herb. Field Mus.).

We are unable to suggest a close relative for this species, which has no particularly outstanding characters but at the same time is not at all similar to any other known from Central America.

SCROPHULARIACEAE

Tetranema roseum (Mart. & Gal.) Standl. & Steyermark, comb. nov. *Episcia rosea* Mart. & Gal. Bull. Acad. Brux. 9, pt. 2: 39. 1842. *T. mexicanum* Benth. ex Lindl. Bot. Reg. pl. 52. 1843. *Allophyton mexicanum* Pennell, Proc. Acad. Nat. Sci. Phila. 77: 271. 1925.—The name *Episcia rosea* is not mentioned by Pennell in his account of this genus (loc. cit.), but it is listed by Hemsley in *Biologia Centrali-Americana* as a synonym of *T. mexicanum*. The type collection of *Episcia rosea* (Galeotti 1905) is listed by Bentham in his account of *Tetranema* (DC. Prodr. 10: 331. 1846), although he does not cite the name applied to the same collection by Martens and Galeotti.

BIGNONIACEAE

Pseudocalymma Standleyi Steyermark, sp. nov.—Frutex scandens, ramis teretibus ochraceis, junioribus obtuse tetragonis vel subteretibus viridibus glabris; folia magna 2.5–4 cm. longe petiolata; foliola 2 crasse chartacea vel subcoriacea 1.5–2 cm. longe petiolulata late elliptica vel ovato-elliptica 15–18 cm. longa 9–11 cm. lata abrupte breviter acuminata, basi obtusa vel subrotundata, glabra, subtus paullo pallidiora basi in axillis nervorum basarium dense impresso-glandulosa, e basi trinervia, nervis lateralibus utroque latere ca. 6, venis prominulis laxe reticulatis; inflorescentiae axillares vel laterales thyrsoideae 18–27 cm. longae 6–8 cm. latae multiflorae, ramis compressis glabris, floribus longipedicellatis; calyx late campanulatus et subinflatus crasse membranaceus 15–23 mm. longus 15–21 mm. latus, glaber, margine brevissime 5-lobo, lobis subinaequalibus vix ultra 2.5 mm. longis 4–7 mm. latis; corolla pallide purpurea ca. 7 cm. longa, tubo extus glabro 4.7 cm. longo 2 cm. lato, lobis ovato-rotundis apice rotundatis 2.3 cm. longis 2.2 cm. latis, extus glanduloso-lepidotis; stamina inclusa, filamentis glabris; antherae glabrae, loculis divaricatis 4.5–4.8 mm. longis; discus annularis; ovarium oblongum minute glanduloso-lepidotum.—Guatemala: Dept. Quezaltenango: Between

Finca Pirineos and Finca Soledad, lower southern slopes of Volcán de Santa María, between Santa María de Jesús and Calahuaché, alt. 1,300–1,400 meters, January 5, 1940, Julian A. Steyermark 33533 (type in Herb. Field Mus.).

Local name "bejuco de ajo," a term given commonly to the various vines of this family having a strong alliaceous odor. Its large and somewhat inflated calyx distinguishes this plant from the North American species of the genus. It probably is more nearly related to *P. alliaceum* (Lam.) Sandwith, of the Guianas and Brazil, of which we have seen no material. As described, that has a smaller calyx and a much smaller corolla. A striking character of *P. Standleyi* is the numerous large impressed glands on the lower leaf surface in the axils of the basal nerves.

GESNERIACEAE

Solenophora abietorum Standl. & Steyermark, sp. nov.—Planta terrestris herbacea vel suffrutescens erecta vel decumbens simplex vel sparse ramosa 50 cm. alta et ultra, caule obtuse tetragono sparse denseve pilis longis laxis albidis multilocularibus villoso; folia opposita subaequalia longipetiolata herbacea, petiolo gracili 3–3.5 cm. longo laxe villoso; lamina elliptica vel ovato-elliptica, interdum ovata vel obovato-elliptica 5.5–9.5 cm. longa 3–5.5 cm. lata, acuta vel breviter acuminata, basi paullo inaequali rotundata vel obtusa, subadpresso serrato-dentata, supra viridis densissime pilis laxis villosa, subtus saepe vinacea ad nervos venasque dense laxeque villosa, nervis lateralibus utroque latere ca. 7; pedicelli axillares solitarii 1–2.5 cm. longi dense villosi; calyx 12–17 mm. longus late campanulatus viridis dense villosus, tubo campanulato ca. 4 mm. longo, limbo breviter 5-lobo, lobis subrotundatis semiorbicularibus 3–4 mm. longis integris vel obsolete denticulatis; corolla lutea 3.5–4 cm. longa vel paullo ultra extus sparse villosa vel fere glabra, tubo superne sensim ampliato fauce non contracto et ca. 1 cm. lato, limbo ca. 3–3.5 cm. lato intus ad faucem sparse villosulo, subregulari, brevissime lobato; filamenta glabra; stylus villosulus.—Guatemala: Dept. Huehuetenango: Cerro Huitz, between Mimanhuitz and Yulhuitz, Sierra de los Cuchumatanes, alt. 1,500–2,600 meters, July 14, 1942, Julian A. Steyermark 48643 (type in Herb. Field Mus.); also no. 48637, with the same data; in cloud forest with *Abies guatemalensis*, Cerro Cananá, between Nucapuxlac and Cananá, Sierra de los Cuchumatanes, 2,500–2,800 meters, July 18, 1942, Steyermark 49067.

The plant represents a species very different from the others known in Guatemala, and we have been unable to find a close ally among any of the Mexican or other Central American species. The large, bright yellow corollas are marked inside with interrupted brown lines or dashes.

ACANTHACEAE

Aphelandra gigantiflora Lindau, f. *lutea* Standl. & Steyermark, f. nov.—*A forma typica speciei non nisi corollis intense luteis differt.*—Guatemala: Dept. Escuintla: Wooded barranco of Río Gavilán, northeast of Escuintla, alt. 720 meters, March 16, 1941, *Paul C. Standley* 89560 (type in Herb. Field Mus.).

A shrub 1.5 meters high; corollas deep yellow. *Aphelandra gigantiflora* is a rather common and handsome shrub in the Guatemalan foothills near the Pacific coast, and numerous collections have been made of it there. Invariably, except for this single collection, it has been found to have brilliant deep red corollas. In other Central American Acanthaceae the color of the corolla is constant except for minor variations in intensity. One would normally expect that a yellow-flowered plant would be specifically distinct from *A. gigantiflora*, but we find no other differences between this color variant and the rest of the Central American specimens.

Carlowrightia myriantha Standl., comb. nov.—*Justicia myriantha* Standl. Field Mus. Bot. 8: 45. 1930.

Beloperone montana Standl. & Leonard, sp. nov.—*Herba decumbens, caulis adscendentibus dense bifariam villosis, pilis fulvis patulis; lamina foliorum elliptico-ovata, obtusa vel acutiuscula, apice ipso obtuso, basi angustata in petiolum decurrentis, integra, supra subdense pilosula, pilis curvatis, subfulvis, subtus purpurea, adpresso-pilosula; spicae breves erectae in paniculam terminalem angustam aggregatae, rhachibus dense subquadrifariam fulvo-villosis; bracteae oblongo-spathulatae, hirsutae, pilis subflavis, plerisque marginalibus; calycis segmenta linearis-subulata, tenuia, subhyalina, dense pilosa, pilis rectis patulis plerisque marginalibus; corolla purpurea, labio superiore oblongo brevi bilobato, inferiore ovato trilobato, lobis rotundatis; capsulae clavatae, hirtellae, pilis apicem versus patulis, basin versus retrorsis.*

Decumbent herb up to 25 cm. long or more; stems ascending, often rooting at the lower nodes, densely villous in 2 lines, the hairs

more or less matted, light yellowish brown, spreading, up to 2 mm. long, the cystoliths numerous, subpunctiform; leaf blades elliptic-ovate, up to 11 cm. long and 6.5 cm. wide, obtuse or acutish, narrowed at base and decurrent on the petiole, membranaceous, entire,



FIG. 1. *Beloperone montana* Standl. & Leonard, sp. nov. (Steyermark 41989): a, plant; b, bracts; c, calyx segment; d, hair from bract; e, anther and portion of filament (a, $\times \frac{1}{2}$; b, c, $\times 2$; d, about $\times 15$; e, about $\times 4$).

the cystoliths 0.25 to 0.5 mm. long, straight, fairly conspicuous on the upper surface, absent beneath; upper surface dark green (*teste* Steyermark), rather densely pilosulous, the hairs curved, brownish, up to 1 mm. long, the costa and lateral veins (5 or 6 pairs) slightly raised; lower surface purple with green margins (*teste* Steyermark), rather uniformly appressed-pilosulous, the hairs curved, 0.5 mm. long or less; petioles about 1 cm. long, densely villous except in the open channels, the cystoliths numerous, subpunctiform; flowers borne in a narrow terminal pedunculate panicle up to 15 cm. long and 3 cm. broad, consisting of short erect spikes up to 3 cm. long and 1 cm. broad; rachis densely villous, the hairs up to 2 mm. long, yellowish

brown, disposed more or less in 4 lines; bracts in 3's, pale green (*teste* Steyermark), oblong-spatulate, the middle one 13 mm. long, 4 mm. wide near the middle, the lateral ones 12 mm. long and 2 mm. wide, all rounded at apex, narrowed to a flat base 1.5 mm. wide, rather prominently veined, hirsute, the hairs up to 2 mm. long, yellowish brown, confined chiefly to the margins and veins; calyx 8 mm. long, the segments linear-subulate, thin, subhyaline, rather densely pilose, the hairs up to about 1 mm. long; corolla dark and pale purple (*teste* Steyermark), about 5 mm. long (immature), the upper lip oblong, shallowly 2-lobed, the lower lip ovate, 3-lobed, the lobes rounded; anther sacs parallel, about 2 mm. long, one attached slightly above the other, the upper one acute at base, the lower one appendaged, the tail slightly less than 0.5 mm. long; capsule 1 cm. long, 4 mm. broad, abruptly pointed at apex, narrowed from about the middle to a flattened stipitate solid base 2 to 2.5 mm. broad, hirtellous, the hairs 0.5 mm. long, spreading or ascending toward the tip, those of the lower portions retrorse; seeds (immature) light brown, flattened; retinacula about 2 mm. long, rounded or obtuse at tip.—Guatemala: Dept. Izabal: On uppermost summit of Cerro San Gil, alt. 1,200–1,300 meters, December 26–27, 1941, *Julian A. Steyermark* 41939 (type in Herb. Field Mus.).

Closely related to *Beloperone Brenesii* Leonard, of Costa Rica, differing chiefly in its much larger leaf blades, relatively shorter petioles, and much larger inflorescences. Plants of *B. Brenesii* are taller (up to 40 cm. high or more), the leaf blades 5 cm. long and 3 cm. wide or less, and the flowers borne in a terminal spike or thyrsus up to 10 cm. long and usually not exceeding 4 cm. The pubescence and the shape and arrangement of the bracts are very similar in the two species.

Dicliptera guttata Standl. & Leonard, sp. nov.—Frutex diffusus vel suffrutex grandis diffusus, caulis subhexagonis pubescentibus, pilis curvatis; lamina foliorum ovata vel oblongo-ovata, breviter acuminata, apice ipso obtuso, basi angustata, in petiolum decurrens, membranacea, integra, hirsutula; petioli graciles, parce pubescentes; cymae axillares et terminales, sessiles vel breviter pedunculatae, compactae, compositae, cymae primariae bracteis subulatis dense ciliatis suffultae, cymae secundariae bracteis inaequalibus, longioribus obovatis, brevioribus oblongis, ambobus subobtusis vel subacutis apice apiculatis, viridibus et purpureo-maculatis, dense ciliatis suffultae; bracteae floriferae lineares, dense ciliatae; calycis segmenta anguste linearia, ciliata; corolla purpurea,

tenuiter pubescens, labio superiore integro, inferiore brevissime trilobo; capsulae ovales, planae, hirtellae, pilis erectis vel retrorsis.

Sprawling shrubs or large suffrutescent herbs up to 1 meter high or more; stems dull green, subhexagonal, pubescent, the hairs up to 0.75 mm. long, variously curved; leaf blades ovate to oblong-ovate, up to 10 cm. long and 4 cm. wide, acuminate (the tip itself blunt),

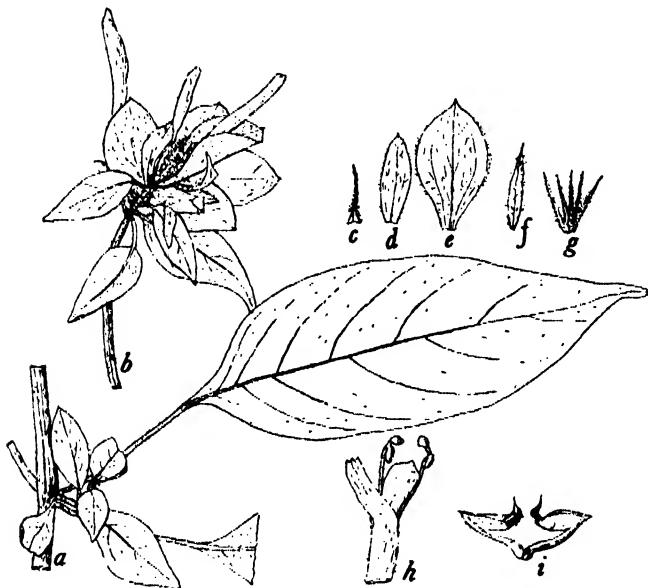


FIG. 2. *Dicliptera guttata* Standl. & Leonard, sp. nov. (Steyermark 42396): *a*, portion of stem; *b*, inflorescence; *c*, bract subtending the primary cyme; *d*, *e*, bracts subtending the secondary cymes; *f*, bract subtending a flower; *g*, calyx; *h*, upper portion of corolla; *i*, expanded capsule (*a*, *b*, $\times \frac{1}{2}$; *c-i*, $\times 1$).

narrowed at base and decurrent on the petiole, membranous, entire, the cystoliths of both surfaces scattered, inconspicuous, 0.25 to 0.5 mm. long, the upper surface grass-green (*teste* Steyermark), hirsutulous, the hairs up to 0.75 mm. long, appressed or subappressed, on the costa pubescent with small curved hairs, both costa and lateral veins (6 or 7 pairs) slightly raised, slender but rather prominent, the lower surface pale dull green (*teste* Steyermark), rather coarsely hirsutulous, especially on the veins, the hairs up to 0.75 mm. long, straight or curved; petioles slender, up to 5 cm. long, sparingly pubescent; flowers borne in crowded, compound, terminal or axillary cymes up to 2.5 cm. long and 3 cm. broad, these subsessile or borne on pubescent

peduncles up to 1 cm. long, the hairs white, straight or curved, up to 1 mm. long, the primary cymes composed usually of 3 secondary cymes, these in turn composed of 2, 3, or more subsessile flowers; bracts subtending the primary cymes subulate, 6 mm. long, 1 mm. wide at base, ciliate; bracts subtending the secondary cymes unequal, one obovate, 14–16 mm. long, 10 mm. wide, the other oblong, 10–12 mm. long and 3–4 mm. wide, both obtusish, apiculate, narrowed at base, pubescent and ciliate, dull green and (especially the larger of the two) bearing conspicuous magenta-brown specks and mottlings in their upper third; bracts subtending the flowers linear, 1 cm. long, 1.5 mm. wide, sharply acuminate, sparingly pilose and ciliate, the marginal hairs 1–1.5 mm. long, those on the flat surfaces shorter; calyx 8 mm. long, the segments 6–7 mm. long, subulate, ciliate, the hairs straight and spreading, both the calyx segments and inner bracts subhyaline; corolla "rose-purplish-orchid" (*teste* Steyermark), finely pubescent, 2.5 cm. long, about 2 mm. broad at base, narrowed to 1 mm. at tip of ovary, thence gradually enlarged to a cylindric tube 3.5 mm. broad at mouth, the lips subequal, oblong, 6–8 mm. long, the upper one about 4 mm. wide, entire, the lower 3 mm. wide, minutely 3-lobed; capsule oval, flattened, 6 mm. long, 3 mm. broad, 1.5 mm. thick near base and narrowed to 1 mm. toward the obtuse mucronate tip, sparingly hirtellous, the hairs straight, those near the tip erect, the others retrorse; mature seeds not seen; retinacula 1.5 mm. long, 0.5 mm. thick at base, abruptly narrowed to a subulate tip.—Guatemala: Dept. Zacapa: Along Rillito del Volcán de Monos, Sierra de las Minas, alt. 1,150–2,100 meters, January 10, 1942, Julian A. Steyermark 42396 (type in U. S. Nat. Herb., no. 1,843,435; isotype in Herb. Field Mus., no. 1,153,510).

This species has apparently no close relatives in Central America. The name alludes to the peculiar purple-spotted bracts.

***Jacobinia umbrosa* (Benth.) Blake, f. *erythrantha* Standl. & Steyermark, f. nov.—**A forma typica speciei differt corollis intense rubris, non luteis.—Guatemala: Dept. Chimaltenango: Moist forest, above Las Calderas, alt. 1,800–2,100 meters, December 15, 1938, Paul C. Standley 60082 (type in Herb. Field Mus.); same locality, October 25, 1937, John R. Johnston 1108.

In the typical form of this species, which is a common, somewhat weedy plant in many parts of southern Mexico and Central America, the large corollas are bright yellow and very showy. So far as we are able to determine, this red-flowered plant differs only in the coloring of its flowers.

Justicia alsophila Standl. & Leonard, sp. nov.—Herba debilis, caulis decumbentibus, teretibus vel apicem versus subquadrangularibus, bifariam pubescentibus, pilis sordidis retrorsis, nodis infimis radicantibus; lamina foliorum ovata vel elliptica, subobtusa, basi cuneata, in petiolum decurrent, tenuis, supra glabra, subitus in costa parce hirtella; petioli graciles, incurvo-puberuli; flores axillares, solitarii, subterminales; bracteae foliaceae, membranaceae, ellipticae

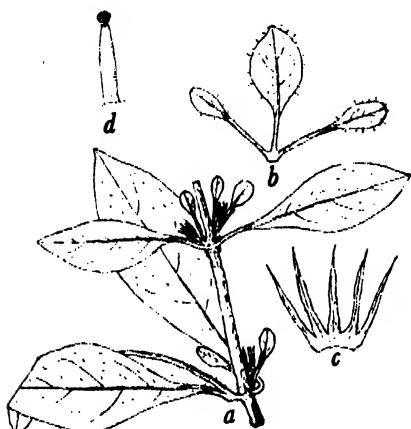


FIG. 3. *Justicia alsophila* Standl. & Leonard, sp. nov. (Slyermark 48884): a, portion of stem; b, bracts; c, calyx; d, hair from bract (a, $\times 1$; b, $\times 2$; c, about $\times 3$; d, about $\times 60$).

vel obovatae, unguiculatae, parce glanduloso-pilosae; calyx glaber, segmentis subulatis; corolla et capsula ignotae.

Weak decumbent herbs up to 25 cm. long; stems moderately branched, rooting at lower nodes, terete or subquadrate toward tip, pubescent in two lines, the hairs sordid, retrorsely curved, 0.5 mm. long or less, the cystoliths numerous, linear (0.25–0.5 mm. long) or subpunctiform at the nodes, inconspicuous; leaf blades ovate to elliptic, 1–3.5 cm. long, 5–20 mm. wide, obtusish at apex, cuneate at base and decurrent on the petiole, membranous, the cystoliths numerous, about 0.3 mm. long, whitish, conspicuous on both surfaces; upper surface glabrous, olive-green, the costa and lateral veins (3–4 pairs) not elevated, inconspicuous; lower surface olive-brown, glabrous except the sparingly hirtellous costa; petioles slender, up to 1.5 cm. long, sparingly incurved-puberulous, the hairs about 0.5 mm. long; flowers solitary, borne in the axils of the upper leaves; bracts leaflike, membranous, elliptic to obovate, the middle bract about 8 mm. long and 3 mm. wide, the lateral ones about 7 mm. long and 1.5 mm. wide, all unguiculate, narrowed to a slender petiole-like base, sparingly glandular-pilose, the hairs spreading,

0.25 mm. long; calyx 4.5 mm. long, glabrous, the segments 5, subulate, 3.5 mm. long, 0.75 mm. wide at base; corollas and capsules not seen.—Guatemala: Dept. Huehuetenango: In steep rocky wet forest of a ravine southwest of Maxbal, about 17 miles north of Barillas, Sierra de los Cuchumatanes, alt. 1,500 meters, July 15–16, 1942, Julian A. Steyermark 48884 (type in U. S. Nat. Herb., no. 1,843,505; isotype in Herb. Field Mus., no. 1,147,110). A paratype was collected on the same date by Steyermark (no. 48705) in woods near a lake about 2 miles southeast of Maxbal. Specimens of this are in the U. S. National Herbarium (no. 1,843,504) and in the Herbarium of Field Museum (no. 1,147,108).

Apparently unrelated to any Central American member of the genus. No trace of a corolla is to be found in the specimens examined. Whether the flowers are cleistogamous and thus inconspicuous or the corollas are early deciduous must be left to conjecture at present. There is also the possibility that the plants from which the specimens were collected had failed to develop normal flowers because of an uncongenial habitat.

Justicia Steyermarkii Standl. & Leonard, sp. nov.—Suffrutex, caulis ramosis teretibus vel apicem versus subquadrangularibus, subbifariam fulvo-puberulis; lamina foliorum oblongo-lanceolata, acuminata, apice ipso obtuso, basi angustata, in petiolum breviter decurrens, integra vel undulata, supra fulvo-hirtella, subtus subglabra; flores axillares, solitarii et subterminales, vel in spicam brevem axillarem subterminalem dispositi; bracteae foliaceae, oppositae, spatulatae, rotundatae, basi angustatae, tenues; calycis segmenta parce hirtella, ciliolata; corolla parce pubescens, labio superiore emarginato, inferiore anguste ovato, purpureo-maculato, trilobato, lobis rotundatis; ovarium parce et minute pubescens, pilis rectis, retrorsis; capsula ignota.

Suffrutescent herbs up to 1.5 meters high; stems branched, terete or the tips subquadrangular, puberulous, the hairs yellowish-brown, about 0.25 mm. long, upwardly curved, mostly disposed in 2 rows; leaf blades oblong-lanceolate, up to 6 cm. long and 2 cm. wide, acuminate, gradually narrowed from middle or lower third to the blunt tip, narrowed at base and short-decurrent on the petiole, entire or undulate, the cystoliths about 0.3 mm. long, very inconspicuous, more numerous on the lower surface than on the upper, the upper surface dull dark green (*teste* Steyermark), sparingly hirtellous or the costa densely so, the hairs about 0.3 mm. long, straight or curved, spreading or appressed, brownish; lower surface

subglabrous, light olive green, the costa and lateral veins (5 or 6 pairs) raised, more conspicuous than above; petioles slender, up to 1 cm. long, densely puberulous, the hairs yellowish brown, upwardly curved; flowers axillary, solitary, and subterminal, or borne on short spikes at or near the tips of the numerous branches, subsessile or borne on short peduncles up to 3 mm. long, these densely brown-puberulous with upwardly curved hairs; bracts opposite, spatulate,



FIG. 4. *Justicia Steyermarkii* Standl. & Leonard, sp. nov. (a, Steyermark 48590; b, c, d, Steyermark 48984): a, portion of branch; b, bract; c, segment of calyx; d, anther and portion of filament (a, $\times 1$; b, c, about $\times 2$; d, about $\times 8$).

about 1 cm. long, 3 mm. wide, rounded at tip, narrowed into a slender petiole-like base about 6 mm. long, the texture and pubescence like that of the leaf blades; calyx 7 mm. long, the segments subulate, 6 mm. long, 1 mm. wide at base, gradually narrowed to a slender tip, sparsely hirtellous, ciliolate; corolla 2 cm. long, sparingly pubescent (hairs spreading or retrorse, 0.25 mm. long), the upper lip whitish gray outside, dull purple within, the lower lip white, marked by 3 broken bands of dull purple, the spots becoming small toward the tip (*teste* Steyermark), the corolla tube about 3.5 mm. broad at base, gradually enlarged to 5 mm. at throat, the upper lip ovate, about 1 cm. long and 7 mm. wide, rounded and emarginate at tip,

the lower lip slightly shorter and narrower than the upper, 3-lobed at apex, the lobes rounded, about 2 mm. long; stamens slightly exserted, the anther lobes obliquely inserted, one slightly above the other, the ventral margins bearded, the basal tail of the upper lobe minute, subulate, that of the lower about 0.5 mm. long, blunt at tip, the connective thin, about 0.75 mm. wide; ovary sparingly and minutely pubescent, the hairs straight, retrorse; capsules and seeds not seen.—Guatemala: Dept. Huehuetenango: Between Xoxlac and Nucajuxtlac, Sierra de los Cuchumatanes, alt. 1,650–2,500 meters, July 17, 1942, Julian A. Steyermark 48934 (type in U. S. Nat. Herb., no. 1,843,506; isotype in Herb. Field Mus., no. 1,153,502). A paratype (U. S. Nat. Herb., no. 1,843,502; Herb. Field Mus., no. 1,153,529), was collected in the same general locality on Cerro Huitz, between Mimanhuitz and Yulhuitz, alt. 1,500–2,600 meters, July 14, 1942, Steyermark 48590.

Related to *Justicia multicaulis* Donn. Smith, but easily separated by its larger leaf blades, denser pubescence, and much larger corollas. The corollas of *J. multicaulis* are rarely over 12 mm. long and their tubes are very slender and scarcely over 1 mm. broad. The bracts of the two species are strikingly similar.

***Mendoncia guatemalensis* Standl. & Steyermark, sp. nov.**—Scandens suffrutescens, caule subteretis dense pilis fulvis subadpressis pubescente; folia petiolata firme membranacea, petiolo 1.5–2 cm. longo adpresso-pilosulo; lamina elliptica 7.5–11.5 cm. longa 4–6 cm. lata subito longiacuminata, basi rotundata et interdum abrupte breviter decurrentis, supra viridis sparsissime adpresso-pilosula vel glabrata, ad costam dense adpresso-pilosula, subtus paullo pallidior ubique sat dense pilis fulvis adpressis pilosula, nervis lateralibus utroque latere 4–5; pedicelli vulgo geminati crassiusculi in statu fructifero 10–14 mm. longo adpresso-pilosuli; bracteolae ellipticae 22–25 mm. longae ca. 13 mm. latae obtusae basi rotundatae dense pilis brevibus incurvo-pilosulae; drupa ellipsoidea 2 cm. longa obtusa glabra.—Guatemala: Dept. Huehuetenango: Between Ixcán and Río Ixcán, alt. 150–200 meters, July 23, 1942, Julian A. Steyermark 49270 (type in Herb. Field Mus.).

Only two other species are found in northern Central America. *M. retusa* differs in having glabrous or nearly glabrous leaves and bracts. *M. Lindavii* Rusby is even more abundantly pubescent than *M. guatemalensis*, with long spreading hairs on the pedicels, and the

bractlets are oblong-lanceolate, about 3.5 cm. long, and acuminate. Three other species known from southern Central America are all easily distinct from this new Guatemalan plant.

Poikilacanthus setiferus Standl. & Steyermark, sp. nov.—*Herba* 60–90 cm. *alta ramosa*, dense pilis longis patentibus plurilocularibus villoso-hirsutis, internodiis plerumque brevibus; *folia petiolata membranacea integra*, petiolo 1–2.5 cm. longo hirsuto; *lamina ovata vel oblongo-ovata* 4–9.5 cm. longa 2–4 cm. lata acuminata, acumine ipso obtuso, basi rotundata usque subacuta non decurrentis, supra viridis sparse setoso-hirsuta, cystolithis crebris conspicuis, subitus pallidior ubique dense pilis longissimis patentibus rigidiusculis hirsuta, nervis lateralibus utroque latere ca. 7; *flores subcapitati*, capitulis terminalibus singulis, pedunculo gracili 6–15 mm. longo dense hirsuto; *bracteae extimae foliis consimiles sed parvis* 2 cm. longae vel breviores, *interioribus oblanceolatis vel lanceolato-linearibus calyce paullo longioribus* dense hirsutis; *calyx* ca. 6 mm. longus, segmentis anguste lanceolatis attenuato-acuminatis hirtellis; *corolla purpurea* ca. 5.5 cm. longa extus sparse villosa, tubo superne sensim ampliato fauce 5–7 mm. lato, labio posteriore ca. 3 cm. longo 1 cm. lato apice brevissime bilobo, labio inferiore paullo breviore; *stamina corollam aequantia*; *antherae loculi* ca. 2 mm. longi.—*Guatemala: Dept. Alta Verapaz: Between Chamá and Cobán, alt. 900 meters, August 15, 1920, Harry Johnson 523 (type in Herb. Field Mus.). Dept. Huehuetenango: Cerro Chiblac, between Ixcán and Finca San Rafael, Sierra de los Cuchumatanes, 1,800 meters, July, 1942, Steyermark 49458.*

Poikilacanthus is a small genus of large plants with exceptionally beautiful flowers. Eight species have been listed, of which only one has been reported from Central America, *P. macranthus* Lindau, which ranges from Guatemala to Nicaragua and Costa Rica. It occurs in the forests of Alta Verapaz, where the type of the present plant was collected. In *P. macranthus*, a rather frequent plant of the wet Guatemalan mountains, the corolla is about 7.5 cm. long, and the pubescence of the lower leaf surface consists of very short and inconspicuous, appressed or curved hairs. In *P. setiferus* the hairs are so long that when the leaf is pressed and dried they extend almost halfway from one lateral nerve to another. The second collection cited is practically sterile, but it has the characteristic pubescence of the type, which we have observed in no other Guatemalan plant of this family.

RUBIACEAE

Stomandra Standl., gen. nov.—Arbores puberulae vel fere glabrae, ramulis subteretibus; stipulae ut videtur caducae, non visae; folia majuscula opposita crasse membranacea petiolata oblonga vel elliptico-oblonga abrupte acuminata; flores parvi albi pentameri bracteolati sessiles vel subsessiles in paniculas amplas multifloras oppositiramosas dispositi; hypanthium obovoideum glabrum; calyx brevis subpatens ciliolatus obscure brevissime depresso-lobulatus persistens; corolla hypocrateriformis parva in alabastro apice rotundata extus glabra, tubo brevi campanulato intus glabro, lobis tubo subaequilongis patentibus, in alabastro valvatis, ovato-oblongis apicem obtusum versus angustatis intus glabris; stamina basi tubi inserta, filamentis crassiusculis basi paullo incrassatis et pilosulis; antherae basifixae erectae oblongae subexsertae apice rotundatae vel subemarginatae, poro magno terminali dehiscentes; discus tumidus obscure 5-angulatus; ovarium 2-loculare, stylo crassiusculo antheris longiore apice rotundato vel subclavato; ovula in loculis numerosa; fructus sine dubio capsularis, non visus.

Stomandra costaricensis Standl., sp. nov.—Arbor 12-metralis, ramis in sicco fuscescentibus fere teretibus, novellis minutissime puberulis vel fere glabris, internodiis brevibus; folia petiolata in sicco fuscescentia, petiolo crassiusculo 1.5-2.5 cm. longo minute puberulo vel glabrato; lamina ovali-oblonga vel elliptico-oblonga 17-20 cm. longa 7-8.5 cm. lata, breviter cuspidato-acuminata, acumine ipso obtuso, basi obtusa vel subacuta, utrinque glabra vel glabrata, supra sublucida, costa nervisque manifestis sed non elevatis, subtus fere concolor, brunnescenti-fuscescens, costa tenera prominente, nervis lateralibus utroque latere ca. 16 gracillimis angulo lato interdum fere recto divergentibus marginem versus sursum curvatis, venis inconspicuis laxe reticulatis; panicula ca. 3.5 cm. longe pedunculata magna 20 cm. longa 14 cm. lata, ramis plus minusve compressis minute puberulis, primariis oppositis, floribus singulis vel cymulosis sessilibus vel subsessilibus; bracteae et bracteolae late triangulares vel triangulari-ovatae, primariae usque ad 5 mm. longae, bracteis superioribus bracteolisque vix ultra 1 mm. longae, puberulae vel glabratae; hypanthium glabrum 1.8 mm. longum basi paullo angustatum; calyx vix 0.5 mm. altus, lobis saepe vix manifestis; corolla 3 mm. longa, tubo lobis subaequilongo, lobis ad margines subincrassatis apice subcincinnatis; antherae fere toto longitudine exsertae 2 mm. longae, connectivo crassiusculo, poris apicalibus magnis.—

Costa Rica: Basin of El General, Prov. San José, alt. 675–900 meters, March, 1940, *Alexander F. Skutch* 4777 (type in Herb. Field Mus.).

It is no pleasure to name a new genus in the Rubiaceae, in which the number of recognized groups is already embarrassingly large, but the possible combinations of generic characters seem to be almost limitless. The present plant in general appearance suggests the genera *Holtonia* and *Elaeagia* of the tribe Rondeletieae, but this resemblance seems to be purely accidental, for its true place is apparently in the Condamineae, to none of whose few genera can it be referred comfortably. Because of the erect anthers, opening by apical pores, its true relationship is probably with *Rustia*. That genus differs markedly in its large flowers whose corollas have an elongate tube much longer than the lobes.

Coussarea mediocris Standl. & Steyermark, sp. nov.—Arbuscula 6–7.5 m. alta, ramis teretibus ut videtur viridibus glabris vel obscure pulverulentis; stipulae ca. 3 mm. altae latissimae intrapetiolares et connatae, apice lato brevissime bilobae persistentes; folia firme membranacea plus minusve lucida graciliter petiolata, petiolo glabro 1.5–2 cm. longo; lamina elliptico-oblonga vel lanceolato-oblonga 9–14.5 cm. longa 3.5–4.5 cm. lata subabrupte longiacuminata, basi acuta, glabra, costa gracili subtus elevata, nervis lateralibus utroque latere ca. 6 arcuato-adscendentibus, venis prominulis laxe reticulatis; inflorescentia terminalis cymoso-paniculata crasse 1.5–3 cm. longe pedunculata, 3–4 cm. longa et aequilata, e basi trichotoma, ramis crassis teretibus glabris, floribus ad apices ramulorum dense aggregatis sessilibus; hypanthium glabrum campanulatum fere 1.5 mm. altum basi rotundatum; calyx vix 0.5 mm. altus viridescens, obscure undulato-dentatus, dentibus multo latoe quam longis; corolla alba 2.5 cm. longa extus glabra, tubo basi ca. 2 mm. lato dein subangustato, superne paullo dilatato, apice 3 mm. lato, lobis linearioribus 7–8 mm. longis obtusis; antherae subexsertae lineares acutae 4 mm. longae.—Guatemala: Dept. Huehuetenango: Forested ravine, vicinity of Maxbal, about 17 miles north of Barillas, Sierra de los Cuchumatanes, alt. 1,500 meters, July 15, 1942, *Julian A. Steyermark* 48782 (type in Herb. Field Mus.).

In most respects this is similar to *C. mexicana* Standl. of Oaxaca, but that has much shorter petioles, smaller corollas, and a somewhat differently arranged inflorescence. The only other species known from Guatemala is *C. impetiolaris* Donn. Smith, in which the leaves are sessile or nearly so.

Hoffmannia huehueteca Standl. & Steyermark, sp. nov.—Frutex 1.5 m. altus vel humilior, interdum 30 cm. tantum altus, vulgo simplex, caule crasso subtereti ferrugineo densissime breviter ferrugineo-villosulo, internodiis plerumque brevibus; stipulae inconspicuae triangulari-acuminatae ca. 3 mm. longae ferrugineo-villosulae; folia petiolata herbacea, petiolo crasso usque ad 2 cm. longo, saepe fere nullo, villulosu; lamina oblanceolata vel obovato-oblonga 10–20 cm. longa 2–7.5 cm. lata, breviter cuspidato-acuminata, acumine obtuso, basin versus longe sensim attenuata, vulgo fere ad basin petioli decurrens, supra viridis glabra, nervis inconspicuis vix elevatis, subtus pallidior viridis in sicco brunnescens ad costam nervosque densissime et brevissime ferrugineo-villosula vel pilosula, inter nervos minute puberula, costa crassiuscula prominente, nervis lateralibus manifestis gracilibus utroque latere ca. 12 angulo lato divergentibus arcuatis; flores in axillis foliorum densissime aggregati numerosi cymulosi, cymulis sessilibus vel brevissime pedunculatis, sessiles vel breviter pedicellati; hypanthium villosulum vel fere glabrum ovale ca. 2 mm. longum; calycis lobi anguste triangulares vel anguste oblongi ca. 2 mm. longi obtusi vel acuti villosuli vel fere glabri; corolla non visa; bacca rubra subovalis glabra vel glabrata in sicco 3.5–4 mm. longa; semina numerosa minuta.—Guatemala: Dept. Huehuetenango (Sierra de los Cuchumatanes): Cerro Negro, 2 miles east of Las Palmas, alt. 1,600–2,000 meters, August 31, 1942, Julian A. Steyermark 51697 (type in Herb. Field Mus.); vicinity of Maxbal, 1,500 meters, Steyermark 48841, 48720; Cerro Huitz, between Barillas and Mimanhuitz, 1,600–2,600 meters, Steyermark 48538. Dept. El Progreso: Sierra de las Minas, Volcán de Santa Luisa, 2,400–3,300 meters, Steyermark 43508.

An exceptionally well-marked species for this genus, distinguished by the abundant ferruginous pubescence, narrow leaves long-attenuate at the base, and very dense clusters of flowers.

Hoffmannia racemifera Standl. & Steyermark, sp. nov.—Frutex simplex vel ramosus omnino glaber, ramis gracilibus, vetustioribus ochraceis, internodiis brevibus; stipulae inconspicuae deltoideae acutae vix ultra 1.5 mm. longae; folia graciliter petiolata tenuiter membranacea, petiolo 1.5–4.5 cm. longo; lamina elliptica vel ovato-elliptica 10–16 cm. longa 4–7.5 cm. lata acuminata vel longe cuspidato-acuminata, basi obtusa vel acuta non vel vix decurrens, subtus paullulo pallidior, nervis lateralibus utroque latere ca. 8 teneris prominulis angulo lato arcuato-adscendentibus; inflorescentiae axillares racemosae simplices secundae graciliter longipedunculatae

pauciflorae laxae petiolis vulgo longiores, pedicellis gracillimis 4–6 mm. longis; hypanthium oboviedo-turbinatum 1.5 mm. longum basi acutum glabrum; calycis lobi vix 0.5 mm. longi triangulares acuti erecti; corolla in alabastro juvenili tantum visa glabra apicem obtusum versus paullo angustata; bacca globoso-ovalis alba in sicco ca. 4 mm. longa.—Guatemala: Dept. Izabal: Cerro San Gil, dense wet forest, alt. 300–900 meters, December 25, 1941, *Julian A. Steyermark* 41910 (type in Herb. Field Mus.); also no. 41991, at about 1,200 meters.

The type is said to have been taken from a tree of 7.5 meters, but the senior author believes that this size is the result of a lapse in memory, since such dimensions are unknown in other species of the genus, all of which are low, simple or sparsely branched shrubs, seldom attaining a height of 3 meters. The second collection is an entire plant with roots and was less than a meter high. This species is most noteworthy because of the slender, long-pedunculate, racemose and secund, few-flowered inflorescences.

Hoffmannia Tuerckheimii Donn. Smith, var. **glabra** Standl. & Steyermark, var. nov.—A typo recedit foliis subtus omnino glabris; caules glabri; corolla extus sparse ferrugineo-villosa.—Guatemala: Dept. El Progreso: Sierra de las Minas, Montaña Canahui, between Finca San Miguel and summit of mountain, alt. 1,600–2,300 meters, February 10, 1942, *Julian A. Steyermark* 48806 (type in Herb. Field Mus.).

The typical form of *H. Tuerckheimii* has abundantly villous leaves and stems. While the difference in pubescence makes the two forms very unlike in general appearance, it is not believed that the one here named is more than a variety.

Hoffmannia quadrifolia Standl. & Steyermark, sp. nov.—Frutex gracillimus laxe ramosus 1–2.5 m. altus, ramis pallidis vel ochraceis obscure tetragonis vel subteretibus fere glabris, novellis sparse pilis brevibus subcurvis pilosulis, internodiis plerumque brevibus; folia parva tenuiter membranacea petiolata, pro magna parte quaternata, pro parte opposita, petiolo gracili 2–8 mm. longo glabro vel ciliato; lamina oblongo-elliptica vel elliptico-ob lanceolata 2–5 cm. longa 8–15 mm. lata obtuse acuta vel acuminata, basi longi-attenuata et interdum fere ad basin petioli decurrent, glabra, ciliata, supra intense viridis in sicco fuscescens, nervis obsoletis, subtus multo pallidior, costa tenera inconspicua, nervis lateralibus utroque latere ca. 4 obscuris, lamina utrinque sat dense cystolithis

parvis pallidis linearibus conspersa vel cystolithis in foliis vetustioribus saepe obsoletis; flores axillares solitarii, pedicellis 2–3 mm. longis; hypanthium glabrum anguste turbinatum 2 mm. longum; calycis lobi lanceolato-subulati acuminati vix ultra 0.5 mm. longi erecti; corolla viridescenti-alba glabra in alabastro 6 mm. longa apicem obtusum versus paullo angustata, tubo anguste obconico; bacca rubra ovalis in sicco 3 mm. tantum longa glabra.—Guatemala: Dept. Zacapa: Sierra de las Minas, slopes of Monte Virgen, around summit of mountain, alt. about 2,400 meters, January 12–13, 1942, Julian A. Steyermark 42600 (type in Herb. Field Mus.).

This plant is noteworthy for its very small, largely quaternate or sometimes ternate leaves, and for the 1-flowered axillary inflorescences. Verticillate leaves are not unknown in this genus, but they are most unusual, at least among Central American species.

Hoffmannia vulcanicola Standl. & Steyermark, sp. nov.—Frutex 2–3-metralis omnino glaber, ramis gracillimis teretibus, internodiis elongatis; stipulae fere ad lineam reductae, parte libera caduca; folia membranacea longipetiolata opposita, petiolo gracillimo 2–3 cm. longo; lamina elliptico-lanceolata usque elliptica vulgo 12–15 cm. longa atque 4.5–7 cm. lata, anguste longiacuminata, basi acuta vel obtusa non vel vix decurrentis, supra in sicco fuscescens, subtus pallidior, nervis lateralibus utroque latere ca. 11 tenerrimis prominulis angulo lato arcuato-adscendentibus, venis obsoletis; inflorescentiae axillares singulae vel 2–3-nae graciliter usque ad 3 cm. longe pedunculatae laxe cymosae vel cymoso-paniculatae vulgo pauciflorae, pedicellis gracillimis 3–7 mm. longis; hypanthium anguste clavatum 1.5 mm. longum glabrum; calyx vix 0.4 mm. altus, dentibus minutis triangularibus subacutis; corolla pallide lutea extus glabra 8 mm. longa in alabastro fere linearis et acuta vel acuminata, fere ad basin 5-loba, segmentis lanceolato-oblongis acutis, tubo brevissimo; bacca ovalis in sicco 5 mm. longa.—Guatemala: Dept. Sololá: Southern slopes of Volcán de Atitlán, above Finca Mocá, alt. 1,000–1,250 meters, June 20, 1942, Julian A. Steyermark 47981 (type in Herb. Field Mus.). Dept. San Marcos: Slopes of Volcán de Tajumulco, above Finca El Porvenir, 1,400–1,700 meters, March, 1940, Steyermark 37258.

A plant of ordinary appearance for the genus, and without any conspicuous distinguishing characters (as usually is the case in *Hoffmannia*). Related to *H. Conzattii* Standl., of Guatemala and southern Mexico, but in that the tube of the corolla is about as long as the lobes.

Palicourea phanerandra Standl. & Steyermark, sp. nov.—
 Arbuscula 4.5–6 m. alta omnino glabra, ramis subteretibus, vetustioribus ochraceis, internodiis brevibus vel elongatis; stipulae fere minutae vix 1 mm. longae apice minute bidentatae; folia inter minora rigide membranacea breviter petiolata sublucida, petiolo 2–3 mm. longo; lamina lanceolato-oblonga vel elliptico-oblonga 6–10 cm. longa 2–4 cm. lata longe cuspidato-acuminata vel sensim attenuato-acuminata, base acuta, in sicco fuscescens, costa venisque supra prominentibus, subitus fere concolor, costa tenera elevata, nervis lateralibus utroque latere ca. 6 arcuatis angulo semirecto adscendentibus, prominentibus, venis prominulis reticulatis; inflorescentiae terminales graciliter 2–3 cm. longe pedunculatae corymbiformes pauciflorae vix ultra 2 cm. longae et paullo latiores, sublaxae, floribus rigide pedicellatis vel alaribus sessilibus, pedicellis arcuatis vix ultra 2 mm. longis; hypanthium ca. 0.6 mm. longum crasse columnare, calyce 0.5 mm. longo, dentibus late triangularibus subacutis; corolla alba extus glabra ca. 15 mm. longa, tubo crassiusculo basi subobliqua superne vix dilatato, lobis oblongis obtusis 4–5 mm. longis patentibus vel subrecurvis intus glabris; stamena longi exserta, filamentis 3.5 mm. tubo corollae longioribus, antheris linearibus 2.5 mm. longis.—Guatemala: Dept. Izabal: Cerro San Gil, uppermost ridges and summit, alt. about 1,200 meters, December 26–27, 1941, Julian A. Steyermark 41952 (type in Herb. Field Mus.).

This is a plant with no outstanding characters except the much exserted stamens, a condition seldom found in this or related genera. The species is of somewhat uncertain position, and could be referred quite as well to *Psychotria*, except that the general appearance and the long corollas are more suggestive of *Palicourea*.

Psychotria lilacina Standl. & Steyermark, sp. nov.—Frutex dense ramosus 1–1.5 m. altus, ramis glabris, vetustioribus crassiusculis teretibus, internodiis brevibus; stipulae in vaginam vix 0.6 mm. altam connatae, vagina dentibus 2 vix 0.5 mm. longis acutis onusta; folia parva petiolata membranacea in sicco fuscescentia, petiolo 2–5 mm. longo glabro; lamina oblongo-elliptica usque obovato-oblonga 2–5.5 cm. longa 0.7–2.2 cm. lata, breviter obtuso-acuminata vel obtusa, basi obtusa usque acuminata, glabra, subitus paullo pallidior, nervis utrinque obscuris, lateralibus utroque latere ca. 6 arcuatis; inflorescentiae terminales corymbiformes vel umbelliformes plerumque 3–5-florae breviter pedunculatae, pedicellis crassiusculis 1–3 mm. longis glabris; hypanthium glabrum columnare ca. 0.8 mm. longum; calyx ca. 3–3.5 mm. longus glaber fere ad basin 5-lobatus, segmentis

lanceolatis adscendentibus vel superne subrecurvis attenuato-acuminatis vel interdum obtusis; corolla lilacina extus glabra ca. 8 mm. longa, tubo crasso cylindraceo, lobis brevibus ovalibus.—Guatemala: Dept. Huehuetenango: Cerro Huitz, between Miman-huitz and Yulhuitz, Sierra de los Cuchumatanes, alt. 1,500–2,600 meters, July 14, 1942, Julian A. Steyermark 48564 (type in Herb. Field Mus.); Cerro Cananá, between Nucapuxlac and Cananá, Sierra de los Cuchumatanes, 2,500–2,800 meters, Steyermark 49107.

A plant of the cloud forest of the high mountains. Well marked among Central American species by the small leaves, deeply lobate calyx, few-flowered inflorescences, and rather large corollas.

Psychotria minarum Standl. & Steyermark, sp. nov.—Frutex ramosus 30–90 cm. altus, ramis subteretibus puberulis vel glabratiss, internodiis brevibus, vetustioribus sordido-ochraceis; stipulae in vaginam brevissimam truncatam connatae, vagina dentibus 2 triangularibus acutis vix 0.5 mm. longis remotis onusta; folia parva breviter petiolata membranacea in sicco fuscescens, petiolo gracili 4–6 mm. longo glabro vel puberulo; lamina elliptica, ovato-elliptica vel oblongo-elliptica 3–6.5 cm. longa 1–2.7 cm. lata, acuta vel acuminata, apice ipso saepe obtuso, basi acuta vel obtusa, supra glabra, subtus pallidior glabra vel praesertim ad costam nervosque scaberula, nervis lateralibus utroque latere 5–6 inconspicuis arcuato-adscendentibus, venis obsoletis; inflorescentiae terminales usque ad 1 cm. longe pedunculatae corymbiformes vulgo 3–5-florae interdum e basi trichotomae glabrae vel glabratae foliis multo breviores, floribus sessilibus vel breviter crasse pedicellatis; hypanthium obconicum 1.2 mm. longum glabrum; calyx vix 0.5 mm. longus, dentibus triangularibus acutis; fructus 4.5–5 mm. longus, pyrenis (una saepe abortiente) dorso obtuse costatis.—Guatemala: Dept. El Progreso (Sierra de las Minas): Between Calera and summit of Volcán Siglo, alt. 2,000–3,000 meters, growing in colonies in shade of trees and shrubs near the summit, January 21, 1942, Julian A. Steyermark 48106 (type in Herb. Field Mus.); hills north of Finca Piamonte, Volcán Santa Luisa, 2,400–3,000 meters, common ground cover in cloud forest, Steyermark 43492. Dept. Zacapa (Sierra de las Minas): Between Loma El Picacho and Cerro de Monos, 2,000–2,600 meters, Steyermark 42809; vicinity of Finca Planados, 2,500 meters, Steyermark 29961.

In general appearance this is much like *P. lilacina*, described above, but the calyces of the two species are very different. The corolla of *P. minarum* is unknown.

Rondeletia chinajensis Standl. & Steyer., sp. nov.—Arbuscula 6–9-metralis, ramis subteretibus gracilibus minute puberulis; stipulae deltoideae persistentes adpressae puberulæ 1.5 mm. longæ acutæ vel subobtusæ; folia petiolata coriacea sublucida, petiolo 8–12 mm. longo crassiusculo puberulo; lamina elliptico-oblonga, rarius oblonga vel ovali-ovata, 3.5–6.5 cm. longa 1.8–3 cm. lata, apice obtusa vel anguste rotundata, basi obtusa vel subacuta, supra glabra, subtus fere concolor in sicco brunnescens, in axillis nervorum interdum breviter barbata, aliter glabra vel glabrata, nervis lateraliibus utroque latere 4–5 inconspicuis; inflorescentiae terminales sessiles vel breviter pedunculatae pauciflorae cymoso-capituliformes, floribus sessilibus vel subsessilibus; hypanthium ca. 1.5 mm. longum densissime albo-pubescent; calycis lobi 5 lineares vel anguste spathulato-lineares plerumque 4.5–5.5 mm. longi acuti vel subacuti, inferne sparse puberuli vel fere glabri viridescentes, interdum cum aliis multo brevioribus et angustioribus alternantes; corolla alba extus sat dense pilis albis patentibus vel subadpressis hispidula, tubo 14–16 mm. longo cylindraceo vel superne paullo dilatato, lobis 4 patentibus ovalibus vel obovato-ovalibus 6–8 mm. longis apice rotundatis intus subdense puberulis, fauce non barbata; capsula (imperfecta) globosa 4.5 mm. diam.—Guatemala: Dept. Alta Verapaz: On knife edge of limestone ridge, Cerro Chinajá, between Finca Yalpemech and Chinajá, alt. 150–700 meters, April 1–2, 1942, Julian A. Steyermark 45637 (type in Herb. Field Mus.).

A species of ambiguous affinities, noteworthy for its very obtuse, coriaceous, small leaves and dense head-like inflorescences.

Rondeletia macrocalyx Standl. & Steyer., sp. nov.—Arbuscula 6–7.5 m. alta, ramis gracilibus, vetustioribus ferrugineis, novellis dense pilis longis rigidiusculis patentibus sordidis hirsutis, internodiis terminalibus brevibus vel brevissimis; folia majuscula breviter graciliter petiolata tenuiter membranacea, petiolo 6–12 mm. longo hirsuto; lamina elliptica vel ovata 9–17 cm. longa 4–7 cm. lata breviter acuminata vel cuspidato-acuminata, basi obtusa usque attenuato-cuneata, utrinque sat dense pilis longis patentibus hirsuta, nervis lateraliibus utroque latere ca. 7 tenerrimis arcuato-adscendentibus; inflorescentiae axillares vel subterminales cymosae plerumque 3-florae interdum usque 9-florae foliis duplo breviores longipedunculatae, pedunculo gracillimo hirsuto 3–5.5 cm. longo, floribus breviter vel longiuscule pedicellatis; hypanthium turbinatum dense longeque hirsutum; calycis lobi 4 anguste lanceolati subaequales ca. 15 mm. longi longiattenuati foliacei utrinque dense hirsuti; corolla alba extus

dense pilis longis adscendentibus vel patulis sordidis hirsuta, tubo gracili 18–25 mm. longo cylindraceo, lobis 4 patentibus obovato-ovalibus 7–8 mm. longis apice late rotundatis intus glabris, fauce non barbata; capsula immatura oblongo-ovoidea 9 mm. longa 5 mm. lata dense hirsuta; semina numerosissima minuta angulata.—Guatemala: Dept. Izabal: Wet forested slopes, alt. 300–900 meters, Cerro San Gil, December 25, 1941, Julian A. Steyermark 41864 (type in Herb. Field Mus.).

This is similar to *R. Mexiae* Standl., of Oaxaca, but in that the calyx is much smaller and the pubescence consists of much less conspicuous, much shorter hairs.

VALERIANACEAE

Valeriana delicata Standl. & Steyermark, sp. nov.—Herba parva laxa simplex erecta vel adscendens 4–10 cm. alta perennis, e rhizomate gracili repente nascens, caule sparse pilis albis patentibus vel subreflexis piloso foliato; folia caulina vulgo 3 paria 3–15 mm. longe petiolata plerumque 5-foliolata, rhachi brevi vix alata pilosula; foliola inaequalia, infima parva vulgo 3–5 mm. longa, superiora elliptica vel oblongo-elliptica sessilia plerumque 9–12 mm. longa obtusa grosse crenata, dentibus utroque latere 2–3, foliolo terminali elliptico, cuneato-elliptico vel obovato 12–20 mm. longo 8–12 mm. lato, crenato vel subtrilobo, basi cuneato petiolulato; foliola omnia tenuia pilis patentibus vel saepius subadpressis rectis pilosa; inflorescentiae terminales singulae corymbosae sed fere capituliformes dense multiflorae vix ad 8 mm. latae basi foliaceo-bracteatae, ramis brevissimis sparse pilosulis; flores albi, corolla minuta vix 1 mm. lata, tubo fere nullo, lobis brevissimis.—Guatemala: Dept. Huehuetenango: Cumbre Papal, on south-facing slopes between Cuilco and Ixmoquí, alt. 1,400–3,000 meters, August 19, 1942, Julian A. Steyermark 50936 (type in Herb. Field Mus.).

A dwarf and delicate plant, but otherwise with few distinguishing characters; not referable to any Mexican species of which we have seen any representation. The plants have every appearance of having attained their normal size, and do not appear to be depauperate plants of some normally large one.

COMPOSITAE

Cacalia pudica Standl. & Steyermark, sp. nov.—Herba erecta perennis 18–30 cm. alta, rhizomate brevi crasso radices numerosas

crassas carnoso-fibrosas emittente, caule simplici scapiformi; folia fere omnia radicalia, petiolo gracili 6–14 cm. longo laxe sparseque viloso vel glabratu; lamina membranacea orbicularis 4–5 cm. lata prope medium peltata, breviter 7-loba, vel lobis interdum fere obsoletis, supra intense viridis glabra, subtus pallidior glabra vel sparse laxeque villosula et saepe glandulifera, lobis brevissimis late rotundatis apiculatis, vulgo plus minusve 3-nerviis; folium caulinum vulgo singulum, alio reducto infra capitulum interdum addito, profundius lobatum, lobis late triangularibus acutis; pedunculus apice incrassatus, bracteis paucis sparsis linearibus vel subulatis onustus; capitulum nutans, involucro 10–12 mm. alto 2–2.5 cm. lato; phyllaria 10–12 subbiseriata lanceolato-oblonga usque late ovata, intense purpurea, acuta vel obtusa, subaequalia vel exteriora angustiora et paullo breviora, ciliolata, sparse prope basin villosa vel glabra; flores disci numerosi, corollis intense purpureis 6.5 mm. longis glabris, dentibus fauce multo brevioribus; achaenia glabra, pappi setis fere albis 6–7 mm. longis.—Guatemala: Dept. Huehuetenango (Sierra de los Cuchumatanes): Alpine areas in vicinity of Tunimá, alt. 3,400–3,500 meters, July 7, 1942, Julian A. Steyermark 48344 (type in Herb. Field Mus.); near Chémal, 3,700 meters, August 9, 1942, Steyermark 50329.

The plant is a very distinct one, different in several respects from all other species of Mexico and Central America. It is noteworthy especially for its solitary nodding heads and distinctly 2-seriate phyllaries. It could almost be taken as the type of a distinct genus, but it is inadvisable to add any further genera to this tribe in which generic characters are so notoriously poor, *Cacalia* itself being dubiously distinct from *Senecio*.

Calea crassifolia Standl. & Steyermark, sp. nov.—Frutex ramosus 1.5–2.5 m. altus, ramis crassis teretibus densissime pilis brevibus patentibus plerumque brunnescentibus hispidulis, internodiis brevibus; folia opposita sessilia vel brevissime crasseque petiolata coriacea vel subcoriacea, rigida, late ovata vel saepius latissime deltoideo-ovata vel rotundo-ovata 5–7 cm. longa 3.5–6 cm. lata, apice obtusa vel subrotundata, basi breviter cordata usque rotundata, supra viridia densissime scabra tactu asperrima, subtus paullo pallidiora, ubique dense pilis brevibus patentibus asperulis hispidula, grosse crenato-serrata, dentibus mucronatis, e basi trinervia, venis subtus insigniter prominentibus et laxe reticulatis; capitula majuscula lutea ad apices ramorum densissime capitato-aggregata sessilia pauca ca. 8 mm. alta et aequilata; phyllaria exteriora herbacea viridia oblonga

vel lanceolato-oblonga acuta vel subacuta interioribus aequilonga vulgo plus minusve patentia dense hispidula ciliata, interioribus stramineis oblongis obtusis vel subacutis ciliatis glabris vel glabratis; corolla 4-4.5 mm. longa extus glabra, tubo abrupte in faucem aequilongum expanso; achaenia angusta angulata 2.6 mm. longa sparse pubescentia; pappi squamae vulgo 5 ca. 4 mm. longa straminea profunde in lobos setaceos longiattenuatos dissectae.—Guatemala: Dept. Alta Verapaz: Along knife-edge of limestone ridge, Cerro Chinajá, between Finca Yalpemech and Chinajá, above source of Río San Diego, alt. 150-700 meters, April 1-2, 1942, Julian A. Steyermark 45627 (type in Herb. Field Mus.).

Marked by the rather large, broad, rigid-coriaceous, very obtuse or rounded, sessile leaves, and the large heads with foliaceous outer phyllaries. The arrangement of the heads, densely capitate and sessile at the ends of the branches, is a most distinctive character if it is normal and constant, which may not be the case.

Calea savannarum Standl. & Steyermark, sp. nov.—Herba erecta perennis gracillima simplex vel sparse supra ramosa 90 cm. alta vel humilior, caule dense pilis albidis patentibus laxis villoso-piloso, internodiis vulgo foliis longioribus; folia opposita parva membranacea sessilia vel subsessilia triangulari-ovata vel oblongo-triangularia 1.5-3 cm. longa 7-16 mm. lata apicem obtusum versus sensim angustata, basi breviter cordata vel truncata, breviter crenata vel undulato-crenata, supra viridia, subtus paullo pallidiora, utrinque pilis albis plurilocularibus villoso-pilosa, trinervia vel paulo supra basin triplinervia; capitula parva lutea ad apicem rami singula vel 2-3, pedunculis gracillimis 4-7 cm. longis; discus ca. 5 mm. altus et 4-5 mm. latus; phyllaria pauca subuniseriata late ovata obtusa 2.3 mm. longa sparse strigillosa vel glabrata; paleae albidae tenues 3 mm. longae oblanceolatae obtusae; corolla fere 2 mm. longa, tubo brevi, fauce longo sensim dilatata; radii pauci, ligulis latis luteis 2.5 mm. longis; achaenia valde immatura ut videtur glabra, pappo coroniformi e squamis minutis vix manifestis composito.—Guatemala: Dept. Izabal: In savanna between Milla 49.5 and Cristina, alt. about 70 meters, April 3, 1940, Julian A. Steyermark 38658 (type in Herb. Field Mus.).

All the heads of the none too ample type specimen are so young that it is difficult to determine exactly the characters of the achene and pappus. In general appearance the plant is very similar to *C. multiradiata* Seaton, of Mexico, to which it was first referred. That

differs, however, in its acutely serrate leaves of rather different outline, and in its larger heads with numerous purplish rays.

Cirsium nigriceps Standl. & Steyermark, sp. nov.—Herba erecta alta, caule superne 1 cm. crasso exalato superne sat dense laxe arachnoideo-tomentoso, tomento albescente vel brunnescente, internodiis superioribus brevibus; folia caulina sessilia et basi lata amplexicaulia, ambitu linear-i-oblonga ca. 17 cm. longa et 3.5 cm. lata supra viridia viscido-villosula vel puberula vel glabrata, subtus pallide viridia, ad costam nervosque laxe arachnoideo-tomentosa, aliter glabra vel glabrata, auriculis magnis valde dilatatis non decurrentibus; lamina profunde pinnatifida saepe fere ad costam lobata, lobis 15-jugis vel paucioribus triangularibus vel triangulari-lanceolatis saepe trilobis vel grosse spinoso-serratis, apice seta straminea gracili sed rigida usque ad 7 mm. longa terminatis, acutis vel acuminatis; capitula ad apices ramulorum sessilia vel subsessilia dense aggregata, paniculam foliatam sparse ramosam 22 cm. longam atque 12 cm. latam efformantia, basi bracteis paucis inconspicuis angustis profunde spinoso-lobulatis involucrata; involucrum late campanulatum vel hemisphaericum in sicco nigrescens ca. 2 cm. altum et aequilatum; phyllaria numerosissima gradata adpressa lanceolato-linearia usque ad 1.3 mm. lata longiattenuata apice seta erecta rigida pallida vix 2 mm. longa terminata, fere omnino glabra minute ciliolata eglandulosa; corolla purpurea extus glabra, tubo fere filiformi ca. 12 mm. longo, fauce brevi paullo ampliato, lobis linearibus patentibus ca. 3.5 mm. longis; achaenia subcompressa glabra cuneato-oblonga 4 mm. longa; pappi setae plumosae sordidae ca. 1.5 cm. longae.—Guatemala: Dept. Huehuetenango: Between Tojquiá and Caxín bluff, summit of Sierra de los Cuchumatanes, alt. about 3,700 meters, August 6, 1942, Julian A. Steyermark 50157 (type in Herb. Field Mus.).

A rather well-marked species of no obvious affinities, not closely related to any of those known hitherto from Central America.

Eupatorium montigenum Standl. & Steyermark, sp. nov.—Frutex vel arbuscula 3–6-metralis, ramis densissime pilis brunnescentibus vel sordidis patentibus villosi-pilosis teretibus, internodiis brevibus; folia graciliter petiolata tenuiter membranacea opposita, petiolo 1.5–3.5 cm. longo ut ramis induto; lamina oblongo-elliptica vel elliptico-ovata 11–17 cm. longa 5–8 cm. lata acuta vel acuminata, basi obtusa, adpresse inconspicue praesertim apicem versus serrato-dentata vel fere integra, supra viridis puberula et ad nervos costam-

que villosula, subtus paullo pallidior ubique sat dense villoso-pilosula vel subtomentosa, penninervia, nervis lateralibus utroque latere ca. 5 arcuatis irregularibus, epunctata, venis pellucidis; inflorescentia terminalis corymboso-paniculata rotundata, capitulis numerosis albis cymulosis, vulgo graciliter pedicellatis, pedicellis plerumque 4-7 mm. longis densissime pilis mollibus patentibus pilosulis; capitula bene evoluta non visa, involucre 5-6 mm. alto campanulato sat dense adpresso-pilosulo; phyllaria inaequalia gradata ca. 3-seriata saltem exteriora rubro tinctis, extimis brevibus ovatis obtusis vel subacutis, intimis oblongis apice obtusis vel rotundatis; flores ca. 10, corolla 4 mm. longa, tubo gracillimo cylindraceo glabro; pappi setae albae 2.5 mm. longae.—Guatemala: Dept. El Progreso: Hills north of Finca Piamonte, on slopes toward summit of Volcán de Santa Luisa, Sierra de las Minas, alt. 2,400-3,000 meters, February 5, 1942, Julian A. Steyermark 43532 (type in Herb. Field Mus.). Dept. Jalapa: Forested slopes of quebrada, Montaña Miramundo, near Miramundo, 2,000 meters, December, 1939, Steyermark 32836.

A plant of somewhat ambiguous affinities, belonging to the group of species with pellucid-veined leaves but not closely related to any other Guatemalan species of that group. Both collections are in bud and the mature heads may be somewhat larger than described here.

Hieracium clivorum Standl. & Steyermark, sp. nov.—Herba perennis erecta vel adscendens, rhizomate brevi crasso radices numerosas crassiusculas emitte; scapus gracillimus 14-27 cm. longus vulgo monocephalus, interdum superne geniculatus et gemmis 1-2 onustus, nudus vel prope basin folio singulo parvo onustus, prope basin pilis perpaucis longis patentibus indutus, superne glaber vel glabratus, infra capitulum pilis brevibus fulvescentibus puberulus vel pilosulus; folia radicalia numerosa 3.5-6.5 cm. petiolo inclusa longa 8-10 mm. lata crassiuscula petiolata, obtusa vel subacuta, nigro-apiculata, utroque latere dentibus paucis repandis nigrescentibus remotis onusta, supra viridia glabra, subtus glaucescentia pallida pilis paucis longis mollibus ad costam nervosque et ad margines conspersa; bractae lineares vel fere filiformes usque ad 8 mm. longis semper paucae atque inconspicuae; involucrum campanulatum 8-10 mm. altum sat dense pilis brevibus viscidis subadpressis pilosulum, phyllariis ca. 12 linear-lanceolatis attenuatis; capitula alba fere 2 cm. lata ca. 1.5 cm. alta; pappus fulvescens; achaenia glabra fuscescentia.—Guatemala: Dept. Huehuetenango: On high bluffs in upper reaches of barranco, above San Juan Ixcoy, Sierra de los

Cuchumatanes, alt. 2,400 meters, August 4, 1942, Julian A. Steyermark 50065 (type in Herb. Field Mus.).

This may be no more than a form of *H. Skutchii* Blake, of the same general region, but that is a much stouter plant with larger, bright yellow heads, the conspicuous and abundant pubescence of the involucres and peduncles composed in part of very coarse, long, spreading, blackish hairs. Although the four plants of the type sheet of *H. clivorum* have each a single head, it is suspected, because of the presence of sterile buds, that the plant sometimes produces more than a single head on each scape.

Mikania concinna Standl. & Steyermark, sp. nov.—Herba scandens glabra, caulis atropurpureis subteretibus, internodiis elongatis; folia inter minora longipetiolata subcoriacea plus minusve lucida, petiolo gracili 1–2.5 cm. longo; lamina late deltoideo-ovata vel rotundo-ovata 2.5–5.5 cm. longa 2–4.5 cm. lata acuta vel acuminata, basi late cordata vel subtruncata, supra viridis, nervis prominulis, venis obsoletis, subtus pallidior obscure pungiculata, e basi 5-nervia, venis obsoletis, margine fere integro sed vulgo utroque latere dentibus ca. 3 repandis minutis onusto; capitula pauca in statu fructifero 12 mm. longa sessilia vel subsessilia, bracteis ovatis vel ellipticis acutis ciliolatis involucro brevioribus; phyllaria purpureo tincta 7–8 mm. longa glabra vel glabrata ciliata oblonga vel late oblonga apice obtusa et apiculata in sicco sordido-brunnea costato-nervosa; corolla glabra pappo brevior; achaenia prismatica 4.5–5 mm. longa sordido-olivacea glabra, pappi setis brunnecentibus 5 mm. longis.—Guatemala: Dept. Zacapa: Sierra de las Minas, climbing over steep mossy banks, middle and upper, southern slopes of Volcán Gemelos, alt. about 3,000 meters, January 26, 1942, Julian A. Steyermark 43292 (type in Herb. Field Mus.).

A well-marked species, outstanding because of its small and very broad, subcoriaceous leaves in which the veins are invisible. The inflorescences are small, dense, and mostly 2.5–3.5 cm. broad.

Mikania huitzensis Standl. & Steyermark, sp. nov.—Herba scandens, caulis obscure hexagonis vel subteretibus glabris vel tantum ad nodos sparse puberulis, internodiis elongatis; folia inter minora graciliter petiolata membranacea, petiolo ca. 2 cm. longo glabro; lamina ovata ca. 4.5 cm. longa et 2.8 cm. lata acuminata vel acuta, basi subcordata vel late rotundata integra vel remote minute repando-denticulata, glabra, supra viridis, subtus paullo pallidior e basi 5-nervia, venis subtus manifestis; capitula numerosa alba in

statu fructifero 12 mm. longa dense cymoso-corymbosa, corymbis foliatis 4–7 cm. latis, capitulis plerumque breviter pedicellatis, bracteis spathulatis usque ellipticis vel ovatis obtusis vel subrotundatis capitula interdum aequantibus; phyllaria 8 mm. longa glabra prope apicem ciliata acuta vel subacuta viridia in sicco brunnescentia pappo paullo breviora; corolla pappi setas subaequans glabra, lobis oblongo-linearibus tubum fere aequantibus; achaenia immatura 3.5 mm. longa pallida sparse puberula vel glabra, pappi setis 5–6 mm. longis sordido-albidis.—Guatemala: Dept. Huehuetenango: Sierra de los Cuchumatanes, Cerro Huitz, between Mimanhuitz and Yulhuitz, alt. 1,500–2,600 meters, July 14, 1942, Julian A. Steyermark 48662 (type in Herb. Field Mus.).

Evidently allied to *M. tacanensis* Standl. & Steyermark., of Guatemala, but in that species the leaves are conspicuously undulate-dentate or repand and the bracts subtending the heads are smaller, mostly lanceolate or oblong-lanceolate, and acute or acuminate.

***Mikania petrina* Standl. & Steyermark., sp. nov.**—Herba scandens, caulis obscure hexagonis vel subteretibus dense brunneo-pilosulis, internodiis elongatis; folia inter minora longipetiolata membranacea in sicco fuscescentia, petiolo 2–3 cm. longo sordide brunneo-pilosulo; lamina ovata vel oblongo-ovata ca. 6 cm. longa et 3.5 cm. lata vel saepe minor, acuminata, basi truncata, subarcte serrato-dentata, utrinque scabra vel scaberula tactu aspera, subtus in statu juvenili brunneo-pilosa, e basi 5-nervia, venis subtus manifestis; capitula in statu fructifero 13 mm. longa numerosa cymoso-corymbosa sessilia dense aggregata, corymbis rotundatis ca. 5.5 cm. latis foliis reductis onustis, bracteis lanceolatis vel oblongo-lanceolatis involucre brevioribus acutis vel acuminatis; phyllaria ca. 7 mm. longa viridia in sicco sordido-brunnea anguste lanceolato-oblonga acuta vel abrupte acuta, dense brunneo-pilosula vel interdum glabrata; corolla glabra pappi setis paullo brevior; achaenia anguste prismatica pallide olivacea glabra vel sparsissime puberula 5 mm. longa, pappi setis fulvescentibus 6–7 mm. longis minute scaberulis.—Guatemala: Dept. Sololá: In wet cloud forest near the summit of Volcán de San Pedro, northern slopes toward Lago de Atitlán, above San Pedro, alt. 2,500–2,800 meters, June 7, 1942, Julian A. Steyermark 47257 (type in Herb. Field Mus.).

A species of ordinary appearance, somewhat related to *M. tacanensis* and *M. huitzensis*, but differing from both in its abundant dirty-brown pubescence.

Siegesbeckia nudicaulis Standl. & Steyerm., sp. nov.—Herba erecta perennis 20–30 cm. alta e radice crassa suberecta vel repente nascens, caule singulo inferne simplici 1–3-cephalo nudo vel tantum foliis 2 bracteiformibus oppositis ca. 2 cm. longis onusto, pedunculis gracilibus 8–16 cm. longis basi bracteis 2 foliaceis oblongis vel lanceolato-oblongis 1.5–2.5 cm. longis sustentis, caule purpurascente sat dense pilis brevibus glanduliferis patentibus piloso, pedunculis densius pilis purpurascentibus vel nigrescentibus glanduloso-pilosis; folia radicalia ca. 8 petiolo inclusio 5–8 cm. longa 2–4 cm. lata; lamina late ovata, rhombeo-ovata vel elliptica apice obtusa vel subrotundata, basi rotundata vel subacuta et saepius abrupte in petiolum lamina breviorem late alatum contracta, undulato-serrata vel subintegra, bene supra basin trinervia, supra sat dense villosa, subtus pallidior glabra vel glabrata; capitula lutea radiis expansis 2–2.5 cm. lata; phyllaria exteriora ca. 8 late linearia 6–8 mm. longa basin versus angustata foliacea densissime glanduloso-pilosula apice rotundata vel subtruncata, patentia vel reflexa; phyllaria interiora obovato-oblonga 3–4 mm. longa obtusa extus glanduloso-pubescentia erecta; corolla 2 mm. longa, tubo pubescente fere filiformi limbo paullo breviore, limbo campanulato, lobis ciliolatis obtusis; radii lamina oblonga vel elliptica 5–10 mm. longa; achaenia irregularia nigrescentia obovoidea vel turbinata 2 mm. longa glabra sublucida apice truncata.—Guatemala: Dept. Huehuetenango: Sierra de los Cuchumatanes, above San Juan Ixcoy, along trail to Tojquiá, alt. 2,800–3,400 meters, August 5, 1942, Julian A. Steyermark 50114 (type in Herb. Field Mus.).

From continental North America only two other species of the genus are known, *S. repens* Rob. & Greenm., of Oaxaca, which we have not seen, evidently distinct from the Guatemalan plant, and the common and widespread *S. triangularis* Cav., of which *S. jorullensis* HBK. is a synonym. That is an altogether different plant, with leafy stems and very numerous, much smaller heads with relatively much more elongate outer phyllaries. The Guatemalan species is the only American plant of the genus that we have seen that appeared really different from *S. triangularis*. We are aware of the fact that the generic name appeared originally as *Sigesbeckia*, but since it was intended to honor a man whose name was written consistently as Siegesbeck, it seems rather silly to use the original spelling, which must have been the result of a slip of the pen.

Verbesina calciphila Standl. & Steyerm., sp. nov.—Frutex ca. 1.5 m. altus ramosus, ramis gracilibus, novellis dense scabro-

hispidulis, internodiis brevibus; folia alterna brevissime petiolata herbacea, petiolo nudo vix ultra 3 mm. longo; lamina oblanceolata vel oblongo-oblanceolata 9–11.5 cm. longa 2–4 cm. lata acuminata, basi longe sensim cuneato-attenuata, remote inconspicue repando-serrulata, supra viridis dense scabra, pilis basi incrassatis, subitus pallidior ad nervos venasque hispidula inter venas glabra; capitula pauca laxe corymboso-paniculata graciliter 2–4.5 cm. longe pedicellata, disco ad anthesin ca. 1 cm. alta et aequilata, in statu fructifero paullo majore; phyllaria inaequalia laxe imbricata vel plus minusve patentia herbacea oblonga vel oblanceolato-oblonga, interiora ca. 1 cm. longa vel paullo ultra, exteriora breviora, obtusa vel acuta scabra vel adpresso-hispidula; paleae rigidae 6–7 mm. longae lanceolato-oblongae acutae glabrae; radii lamina oblongo-linearis 10–14 mm. longa lutea; achaenia immatura cuneato-oblonga 3 mm. longa glabra ut videtur anguste alata strigoso-ciliata, pappi setis ca. 4 mm. longis erectis antrorse scaberulis.—Guatemala: Dept. Huehuetenango: Sierra de los Cuchumatanes, between Tojquiá and Caxín bluff, alt. 3,700 meters, a shrub hanging from a limestone bluff, August 6, 1942, Julian A. Steyermark 50132 (type in Herb. Field Mus.); above San Juan Ixcoy, upper forest above Yulhuitz, 2,400 meters, August 4, 1942, Steyermark 50080.

Among Central American species this plant has no close relatives, nor does it agree with any of the shrubby species reported from Mexico. In foliage it suggests the Guatemalan *V. pleistocephala* Donn. Smith, which has much smaller heads with short rays.

Verbesina minarum Standl. & Steyermark, sp. nov.—Frutex vel arbuscula 2.5–4.5 m. alta ut videtur dense ramosa, ramis crassiusculis subteretibus, novellis dense pallido-strigulosis, vetustioribus brunnescentibus, internodiis brevibus; folia alterna breviter petiolata subcordiacea, petiolo crasso usque ad 13 mm. longo minute puberulo vel strigilloso; lamina oblanceolata vel oblongo-oblanceolata 4.5–11 cm. longa 1–4 cm. lata obtusa vel acuta basin versus longe sensim angustata, integra vel prope apicem pauciserrata, supra viridis glabra, nervis pallidis manifestis, subitus pallida, glabra vel minute et inconspicue strigillosa, costa crassiuscula prominula, nervis lateralibus utroque latere 7–8 inconspicuis arcuatis irregularibus, venis obsoletis; inflorescentia terminalis corymbosa dense multicapitata vulgo 3–6 cm. lata foliis brevior, capitulis albis usque ad 12 mm. longe pedicellatis vel fere sessilibus, campanulatis in statu florifero ca. 7 mm. longis basi obtusis; involucrum 4–4.5 mm. altum, phyllariis viridescentibus graduatis imbricatis, exterioribus oblongo-

ovatis, interioribus oblongis, omnibus obtusis vel subacutis minute sparse puberulis; corollae 3.5 mm. longae prope basin puberulae, tubo basi fere filiformi subito in faucem cylindraceum ampliato, lobis brevissimis; paleae linearis-oblunga 4 mm. longae pallidae membranaceae obtusae; achaenia immatura compressa glabra obscure ciliata, pappi setis 1.2–2 mm. longis erectis.—Guatemala: Dept. Zacapa (Sierra de las Minas): Río Repollal, upper slopes to summit of the mountain, alt. 2,100–2,400 meters, January 12–13, 1942, Julian A. Steyermark 42489 (type in Herb. Field Mus.); also no. 42516. Dept. El Progreso (Sierra de las Minas): Between Calera and summit of Volcán Siglo, 2,000–3,000 meters, January 21, 1942, Steyermark 43030.

An isolated species, not closely related to any other of which we have seen material. It is marked by its woody branches, small coriaceous glabrous leaves, minute pubescence of the stems, and small white discoid heads.

Vernonia mima Standl. & Steyermark, sp. nov.—Frutex erectus 2–3-metralis, ramis brunnescensibus subtortuosus, novellis dense pilis sordidis pilosis vel subtomentosis; folia longiuscule petiolata membranacea, petiolo crassiusculo 1.5–3 cm. longo dense tomentoso; lamina late ovata vel elliptico-ovata 7–12.5 cm. longa 5–8 cm. lata acuta, basi rotundata vel obtusa, interdum abrupte contracta et breviter decurrens, subintegra, supra sparse puberula vel glabrata, subtus vix pallidior, minute puncticulata, laxe subtomentosa vel breviter pilosula, penninervia, nervis lateralibus utroque latere 6–8 prominentibus gracilibus arcuatis, venis prominulis laxe reticulatis; capitula alba dense cymulosa sessilia vel subsessilia turbinato-campanulata numerosissima, cymulis paniculam magnam ovoideam foliatam 20–30 cm. longam efformantibus, ramis dense tomentulosis vel sordido-pilosulis; involucrum 8 mm. altum; phyllaria 4–5-seriata gradata viridescentia pallida glabra vel glabrata, exteriora triangulare-ovata acuta interdum tomentulosa, interiora oblongo-linearia obtusa pappi setas aequantia; flores ca. 10; achaenia immatura turbinata brunnea glabra 1.3 mm. longa, basi calloso-incrassata, pappi setis albis 4.5 mm. longis deciduis.—Guatemala: Dept. Huehuetenango: Damp hillside thicket, near crossing of Río San Juan Ixtán, east of San Rafael Pétzal, alt. about 1,730 meters, January 9, 1941, Paul C. Standley 82871 (type in Herb. Field Mus.). Dept. Quetzaltenango: Volcán de Santa María, above Santa María de Jesús, 1,500–3,000 meters, January, 1940, Steyermark 33990.

This seems to be related most closely to *V. oaxacana* Schultz. Bip. of Mexico, which we know only by a photograph of the type. That species is reported by Blake from both Oaxaca and Chiapas, and might well be expected to occur in Quezaltenango and Huehuetenango. According to the type photograph, however, it is a plant in which the leaves have narrow bases, and all or most of the heads are on long slender pedicels. In general appearance this new species is much like *V. leiocarpa* DC., a common shrub of Guatemala, belonging to the group treated as a separate genus *Eremosis*, by some authors. In that genus the flowers are less numerous, generally only 1–6 in a head.

NOTES

***Erechtites agrestis* (Swartz) Standl. & Steyermark, comb. nov.**
Sonchus agrestis Swartz, Prodr. Veg. Ind. Occ. 110. 1788.

***Rumfordia Standleyi* (Steyermark) Standl. & Steyermark, comb. nov.** *Polymnia Standleyi* Steyermark, Field Mus. Bot. 23: 106. 1944.

FURTHER STUDIES IN THE GENUS DODONAEA

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FURTHER STUDIES IN THE GENUS DODONAEA L. (FAMILY SAPINDACEAE)¹

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Dodonaea viscosa (L.) Jacq. Enum. Syst. Pl. 19. 1760. *Staphylo-dendron foliis lauri angustis* Plum. Cat. Pl. Amer. p. 18, 1703 and Pl. Amer. Ic. edit. Burm. fasc. 10: 246. 1760. *Aceri vel palituro* [sic! *re vera paliuro*] *affinis, angusto oblongo ligustri folio, flore tetrapetalo* *herbaceo* Sloane Nat. Hist. Jamaica 1": 27, and 2: *tab. 162, f. 3.* 1707. *Dodonaea* L. Hort. Cliff. 144. 1737. *Ptelea viscosa* L. Sp. Pl. 118. 1758. *Ptelea foliis simplicibus* Plum. *op. secund. cit. tab. 247, f. 2.*²

The synonymy for *Dodonaea viscosa* proper is exceptionally large and must be omitted here for the most part. It was treated in great detail by Radlkofer in Martius' *Flora Brasiliensis* (13, pt. 3: 639-645. 1900). The combination *D. viscosa* begins with Jacquin (*loc. cit.*). Jacquin gave no detailed description, but cited the Sloane plate 162, *f. 3* (above listed). If we stop with the Sloane figure, as those who cite only Jacquin for the authorship of *D. viscosa* apparently do, we fix the type of the species proper as a Jamaica plant with leaves fairly large (and not very numerous), spatulate to broadly oblanceolate, apically obtuse to rounded, and very distinctly veined.

However, there is every reason to believe that Jacquin merely adapted the trivial name *viscosa* from *Ptelea viscosa* L. (*vide supra*).³ This being the case, we may trace the Linnaean concept directly to Hortus Cliffortianus p. 144. There the first reference given is to *Staphylo-dendron foliis lauri angustis* Plum. Cat. 18. This reference to Plumier's Catalogue is supported only by the heading to the list of names among which it stands (in Plumier's Catalogue), and from this heading we learn that the plant had been described and delineated by Plumier himself in the "Insulis Americanis." His delineations appeared later in fascicle 10 of his large work on American plants, edited by Burmann (*vide supra*), and in figure 2 of plate 247 of that work we come to an illustration that, with better claim than

¹ For an earlier paper on *Dodonaea*, *vide Amer. Journ. Bot.* 32: 202-214. 1945.

² A conspectus of the varieties and formae of *Dodonaea viscosa* treated in this article will be found beginning on page 308.

³ Indeed, many authors, Bentham among them, have ignored Jacquin altogether and accredited the combination *D. viscosa* entirely to Linnaeus.

the Sloane sketch, may serve as the type basis for *Dodonaea viscosa* in its narrowest sense. The spray shown has only five leaves. These are less or indeed not at all narrowed toward the base, the two largest being *one narrowly and one moderately oblong*. All are somewhat acute or acutish at the apex. The latter of these two oblong leaves is identically the broad kind characteristic of the forma *repanda* described by Radlkofer (*loc. cit.*) and based by him upon *Dodonaea repanda* Schum. & Thonn. *Beskr. Guin. Pl. in Danske Vidensk. Selsk. Afhandl.* III: 214 (seors. impr. p. 194), no. 1. 1828.¹ Radlkofer described the forma *repanda* so as to include *not only the very form shown in the Plumier plate but the one shown in Sloane's*. Moreover, he cited these two illustrations for f. *repanda* but somewhat guardedly with the abbreviation "cf." In nature, the two vary so much that, rather than employ a lesser rank of subforma for each, we might well leave them together as constituting a highly variable forma, namely, f. *repanda*.

Several varieties have been proposed for *D. viscosa*, but apparently the first one described intentionally as representing the typical form of the species was var. *vulgaris* Benth. *Fl. Austral.* 1: 476. 1863.

Bentham made an exhaustive study of the forty or more species of *Dodonaea* known in his day and found that most of the extra-Australian forms were referable to his *D. viscosa* var. *vulgaris* or to one or the other of two other varieties that he established for *D. viscosa*, viz., vars. *angustifolia* and *spatulata*.² He excepted "perhaps, the *D. eriocarpa* from the Sandwich Islands, *D. Thunbergiana*, Eckl. and Zeyh., from S. Africa, and one or two Mexican ones, which, whether varieties or species, do not occur in Australia." Bentham remarked upon the "almost protean forms the species assumes in Australia" and added that they "are very difficult to distribute into definite varieties."

In 1900 appeared the exceptionally able and brilliant treatment of *D. viscosa* by Radlkofer, already cited. Radlkofer (p. 646) accepted Bentham's three varieties, but listed only vars. *vulgaris* and *angustifolia* for Brazil, with the flora of which he at that time was concerned exclusively. He subdivided var. *vulgaris* into three formae for Brazil,

¹ This leaf is shown somewhat apart from the other four and arises from a main branch on a side shoot of which the other four are borne. The artist superimposed a large fruiting cluster above much of it and thus possibly some earlier workers have overlooked or ignored it. Fortunately, however, fully enough of its median and lower blade is shown to make identification certain.

² Bentham's spelling was *spatulata*, but the original spelling by Sir James E. Smith, from whom he derived the name, was *spatulata*.

viz., *repanda* (Schum. & Thonn.) Radlk., *Schiedeana* (Schlecht.) Radlk., and *Burmanniana* (Schum. & Thonn.) Radlk. Var. *angustifolia* he left intact.

Like Bentham, he had been impressed with the extreme polymorphism in *D. viscosa*. Thus he wrote: "Miro modo ludit forma et magnitudine foliorum fructuumque. Varietates 3 cum cl. Bentham (in Fl. Australiensi) discernere par est, α *vulgaris*, β *angustifoliam*, γ *spathulatum*, quae formas varias alias in alias transeuntes includunt. E Brasilia non nisi var. α et β et formae sequentes [*repanda*, *Schiedeana*, et *Burmanniana*] innotuerunt." Radlkofer's nomenclature, based as it was on rules since altered by international congresses, has been found to need revision. The required changes have recently been published (Amer. Journ. Bot. 32: 214. 1945) and the detailed explanations pertaining thereto are given in the present paper. Radlkofer's general understanding of the plant entities themselves, however, is seen to have been so trustworthy that we may well commence here an interpretation of *D. viscosa* with an abridged translation of his description and conspectus of *D. viscosa* vars. *vulgaris*, including its component formae, and *angustifolia*. Of necessity, these were more or less arbitrary. He described *D. viscosa* collectively as: Slender trees 3-5 meters tall or branched shrubs 1-3 meters tall. Branches erect, the floriferous ones 2-3 mm. thick, bark brown or dark. Leaves (petiole 0.2-1 cm. long included) now up to 12 cm. long, 4 cm. wide (f. *repanda*), now up to 15 cm. long, only 2 cm. wide (f. *Schiedeana*), now 7-10 cm. long, 1.5-2 cm. wide (f. *Burmanniana*), now 7-9 cm. long, 0.5-1 cm. wide (var. *angustifolia*). Thyruses subequal to half the foliar length, longer in fruit; pedicels at anthesis 0.5-0.8 cm. or in fruit 1-1.5 cm. long. Flowers 3 mm. long, whitish-green. Sepals 3 mm. long, 1.5 mm. wide, 3-nerved, puberulous especially at margin and apex. Staminal filaments scarcely 1 mm. long, anthers 2.5 mm. long. Capsule now larger, suborbicular (its wings subequal to the locules in width included), 2.2 cm. long, 2.5 cm. wide; now mediocre, obovate, 1.5 cm. long and 1.8 cm. wide; now small, about 1 cm. in diameter, sanguineous when fresh, in dry state brownish or stramineous. Seeds about 2.5 mm. across.

Of considerable additional aid to the student of *D. viscosa* are the short, summarizing descriptions that Radlkofer gave (*op. cit.* 646). These are repeated essentially as he presented them:

Var. α *vulgaris* Benth.: Folia sat larga, subobovata, ex oblongo latiuscula vel elongata vel anguste lanceolata, vel ex oblongo-lance-

olata cuneato-attenuata; capsula suborbicularis vel obcordata sat magna.

Forma 1. **repanda**. . . . Folia maxima ex oblongo latiuscule lanceolata utrinque acuta vel apice obtusa, inde subobovata; fructus plerumque maximi, suborbicularis, 3-alati vel 2-alati quoque in eadem inflorescentia. . . .

Forma 2. **Schiedeana**. . . . Folia longissima, elongate lanceolata, utrinque sensim acutata; fructus sat magni, orbicularis vel subobcordati, utrinque vel apice tantum emarginati, sinu apicali saepius largiore. . . .

Forma 3. **Burmanniana**. . . . Folia mediocria, ex oblongo anguste lanceolata cuneatave, apice acuta vel obtusiuscula, in petiolum longius breviusve attenuata; fructus mediocres, suborbicularis, apice et basi excisi vel subobcordati, basi vix excisi. . . .

Var. β **angustifolia** Benth.: Folia angusta, lineari-lanceolata vel sublinearia, longiora vel breviora; fructus minores, utrinque vel apice tantum excisi, alis saepius latioribus. . . .

Some years ago, I was invited by Mr. Otto Degener, well-known authority on the Hawaiian Island flora, to determine the numerous collections of *Dodonaea* that he had made in the Hawaiian Islands. I accepted the task but I soon found that it necessitated a comparative study of a vast amount of material from other regions of the earth. Several American and European herbaria cooperated by lending all or part of their *Dodonaea* material, and assistance and encouragement were given from time to time by their custodians, especially by Dr. Albert C. Smith, Curator of the Herbarium of Arnold Arboretum. It is a pleasure to acknowledge here my indebtedness to these institutions and botanists.

As the specimens of *Dodonaea viscosa* in herbaria have been observed to have been only too often misdetermined, or else undetermined to the proper variety or forma, I have had occasion to label many hundreds in accordance with the nomenclatural results of the present study. Many of these are cited later in this paper, but some of those determined for Radlkofer's three formae of var. *vulgaris* Benth. are listed here for the aid they may afford to other workers.¹

¹ The following abbreviations are used for the depositories of specimens cited in this paper: Arn., Arnold Arboretum, Jamaica Plain; Bail., Herbarium of Liberty Hyde Bailey, Ithaca; Berl., Berlin Botanical Garden; Bish., Bernice P. Bishop Museum, Honolulu; Calif., University of California, Berkeley; Carn., Carnegie Museum, Pittsburgh; Chi., Field Museum of Natural History, Chicago; Corn.,

Specimens examined for f. *repanda* (Schum. & Thonn.) Radlk.:¹

Florida: Otto Frank, Pinellas, December, 1899, to April, 1900 (N.Y.); Frederick L. Lewton, Disston City, August 5, 1894 (N.Y.); Harold N. Moldenke 3576, in hammock, Miami, December 24, 1927 (N.Y.); John K. Small 10421, coastal sand-dunes west of Cat Point, April 23, 1922 (Gray; N.Y.).

Clarion Island: John T. Howell 8363 *pro parte*, Sulphur Bay, March 23, 1932 (N.Y.).

Baja California: Marcus E. Jones, trail down the Lagunas, west side, September 24, 1930 (Calif., *sub nom.* *D. lagunensi* M.E.J.); Jones, Cayuca Ranch, Loreto, October 23, 1930 (N.Y., *sub nom.* *D. lagunensi* M.E.J.); Nelson & Goldman 7438, shrub 10–20 feet tall, alt. 3,000–4,500 feet, road from San Bernardo to Sierra La Laguna, January 21, 1906 (Gray).

Nuevo León: C. H. & M. T. Mueller 335, Diente Canyon, mountains near Monterey, July, 1933 (Chi.).

Hidalgo: V. H. Chase 7401, alt. 5,000 feet, mountain ravine, Jacala, July 10, 1939 (Chi.; N.Y.).

Guanajuato: Alfredo Dugès, City of Guanajuato and vicinity, April, 1898 (Gray).

Guerrero: Ruth Q. Abbott 179, small tree or shrub, native name *chapulixile*, Taxco, December 23, 1936 (Gray); Abbott 220, small tree or shrub, very common, Taxco, June 14, 1937 (Gray).

Cornell University, Ithaca; Deg., Herbarium of Otto Degener (until recently of Honolulu); Del., Delessert Herbarium, Geneva; Flor., Institute of Botany of University of Florence; Goth., Arboretum (or Botanical Garden) of Gothenburg; Gray, Gray Herbarium of Harvard University, Cambridge; Kew, Royal Botanical Gardens, Kew; Len., Botanical Garden of Leningrad (*Hortus Petropolitanus*); Minn., University of Minnesota, Minneapolis; Mo., Missouri Botanical Garden, St. Louis; Mun., Botanical Museum of Munich; Mus. V., Natural History Museum of Vienna; N.Y., New York Botanical Garden; Par., Museum of Natural History, Paris; Penn., University of Pennsylvania, Philadelphia; Phila., Academy of Natural Sciences, Philadelphia; U.S., United States National Museum, Washington, D.C.; U.V., University of Vienna; Yunck., Herbarium of Dr. Truman G. Yuncker, Greencastle, Indiana.

¹ Radlkofer (*op. cit.* 646) cites also the State of Maranhão, Brazil, for f. *repanda*, although no authentic specimen of f. *repanda* from that state has been available to me.

It may be noted here that f. *repanda* is the f. *typica* of certain later writers (e.g., Robinson, Fl. Galapagos Isl., Proc. Amer. Acad. 38: 171. 1902; Herter, Rev. Sudam. Bot. 5: 85. 1937). We may note, too, that Otto Kuntze published (Rev. Gen. Pl. 1: 148. 1891), prior to Radlkofer's establishment of the forma *repanda*, the names *viridula* ("1. *viridula* O. Ktze. *Flos viridulus antheris albis. Java, in Strandnähe*") and *lilacina* ("2. *lilacina* O. Ktze. *Flores apice lilacini. Silla de Caracas*") for specimens of *D. viscosa* var. *vulgaris*. However, Kuntze used these names loosely, omitting formal assignment of definite rank, so that they remain of uncertain status and cannot invalidate the name *repanda* for the rank of a forma.

British Honduras: *William A. Schipp* 494, height 6 feet, trunk diameter 2 inches, along sea-beach, Stann Creek, December 9, 1929 (Calif.; Chi.; Gray; N.Y.).

Guatemala: *Alexander F. Skutch* 1005 p. p., alt. 6,800 feet, on bushy mountain side, San Miguel Acatan, Dept. Huehuetenango, August 18, 1934 (Chi.); *Paul C. Standley* 82390, shrub 1-1.5 meters tall, sandy river-bed, alt. *circ.* 1,780 meters, Río Pucal, *circ.* 14 km. south of Huehuetenango, January 4, 1941 (Chi.).

Honduras: *M. A. Carleton* 619, Puerto Cortez, August 15, 1924 (Gray); *Paul C. Standley* 53038, shrub 5 feet tall, in thicket along beach, vicinity of Tela, Dept. Atlántida, December 14, 1927, to March 15, 1928 (Chi.); *Percy Wilson* 13, sandy soil between Highland Creek and sea, Puerto Sierra, January 15, 1903 (N.Y.).

Nicaragua: *Charles L. Smith* 92, shrub 4-7 feet tall, vicinity of San Juan del Norte (Greytown), November 25, 1895 (Gray; N.Y.).

Costa Rica: *Fernando Solis R.*, no. 557, alt. 50 meters, La Barra, February 5, 1939 (Chi.).

Panama: *V. C. Dunlap* 480, small tree along beach, Bar Mouth, Changuinola Valley, Prov. Bocas del Toro, March 2, 1924 (Chi.).

Colombia: *I. F. Holton*, Choachí, January 18, 1854 (N.Y.).

Venezuela: *H. Pittier* 24, native name *chaparro*, on dry hills, Avila, March, 1937 (Chi.); *Llewelyn Williams* 12305, shrub, alt. 800 meters, common the whole length of old highway between Caracas and La Guaira, Distr. Fed., January 4, 1940 (Chi., 2 sheets); *Williams* 12369, shrub up to 8 dm. tall, among low shrubs on dry and exposed slopes, alt. up to 2,200 meters, El Picacho de Galipan, Distr. Fed., January 8, 1940 (Chi.).

French Guiana: *Mélinon*, Maroni, 1877 (Chi.).

Brazil: *Blanchet* 657, vicinity of Bahia, 1831 (N.Y.); *H. M. Curran* 681, Nova Friburgo, State of Rio de Janeiro, December 9, 1918 (Chi.; N.Y.); *Francis Drouet* 2507, shrub up to 2 meters tall, on upper beaches, Barro do Ceará, Municipio de Fortalya, State of Ceará, September 25, 1935 (Chi.; Gray; N.Y.); *George Gardner* 5978, Brazil, 1836-1841 (N.Y.); *Martius* 397, Brazil (Gray; N.Y.).

Bolivia: *Otto Kuntze*, alt. 2,000 meters, Tunari Mountains, April, 1892 (N.Y.).

Bermuda: *J. W. Harshberger*, limestone sinks, Walsingham, June 16, 1905 (Gray; U.S.).

Cuba: *N. L. Britton* 2145, sand dunes, Conde Beach, Guantanamo Bay, Prov. Oriente, March 17-30, 1909 (N.Y.; U.S.); *N. L. &*

E. G. Britton & J. F. Cowell 12493, coastal thicket, Punta Piedra, Nipe Bay, Prov. Oriente, March 7, 1912 (Chi.; N.Y.; U.S.); *C. Wright* 2173, sea-shore, Cuba, 1860-1864 (Gray).

Haiti: *H. H. Bartlett* 17432, small tree, Bayeaux, June 16, 1941 (U.S.); *E. L. Ekman* 2603, on the beach, November 21, 1924 (N.Y.); *Emery C. & Genevieve M. Leonard* 13812, shrub 5 feet tall, on beach of Bord de Mer, vicinity of Jean Rabel, March 11, 1929 (Gray; U.S.); *Leonard & Leonard* 15351, shrub 5 feet tall, beach west of harbor, vicinity of La Vallée, Tortue Island, May 4, 1929 (N.Y.; U.S.); *George V. Nash* 149, small tree, along shore, Bayeux, near Port Margot, August 5, 1903 (Chi.; N.Y.).

Santo Domingo: *W. L. Abbott* 2564, small tree, near sea level, Jovero, February 1-7, 1923 (U.S.); *Eggers* 2609, *in fruticetis maritimis* at Puerto Plata, June 22, 1887 (N.Y.; U.S.); *James A. Faris* 542, low tree, 8-12 feet tall, sandy beach, Isl. Santo Domingo, September, 1921 (U.S.); *Miguel Fuertes* 317, alt. 250 meters, Barahona, June, 1910 (Chi.; Gray; N.Y.; U.S., 2 sheets).

Puerto Rico: *N. L. Britton & J. F. Cowell* 1543, shrub 2.5 meters tall, in coastal thicket, Cataño, February 14, 1914 (N.Y.; U.S.); *Mary J. Fisher* 17 (U.S.); *A. A. Heller* 4507, alt. 10 feet, along the beach, near Mayagüez, February 3, 1900 (Chi.; Gray; N.Y.; U.S.); *W. E. Hess & F. L. Stevens* 4886A, Boqueron, November 12, 1913 (N.Y.); *Brother Hioram*, Palo Seco, October, 1912 (N.Y.); *J. R. Johnston* 722, Mameyes, December 5, 1912 (N.Y.); *J. I. Otero* 448, Cabo Rojo, Distr. Bayamon, January 23, 1938 (Chi.); *F. H. Sargent* A28, shrub, on beach, Mayagüez, May 22, 1937 (U.S.); *P. Sintenis* 108, sea-shore at Guanajibo, Mayagüez, October 27, 1884 (Gray; U.S.); *F. L. Stevens* 2434, Patillas, June 22, 1913 (N.Y.); *J. A. Stevenson & J. R. Johnston* 1352, Cataño, February 19, 1914 (U.S.); *L. M. Underwood & R. F. Griggs* 179, sandy sea-shore, June 20, 1901 (N.Y.; U.S.).

Jamaica: *R. C. Alexander*, Port Royal Mountains, April, 1850 (N.Y.); *E. Campbell* 6052, Port Henderson, August 23, 1895 (N.Y.); *Mr. March* 1335 (Gray).

Grand Cayman: *Charles F. Millspaugh* 1264, Georgetown, February 12-15, 1899 (Chi.).

St. Martin: *I. Boldin* 2504, in 1906 (N.Y.).

Marie Galante: *Père Duss* 3627, on sands near sea's edge, between Saint Louis and Grand Bourg, April 19, 1895 (N.Y.; U.S.).

St. Thomas: *Baron Eggers*, along the shore, Longbay, August, 1880 (Gray); *Eggers*, July, 1881 (U.S.).

Martinique: *Père Duss* 368, pretty shrub, sands at sea-shore, Diamant, 1880 (Chi.; N.Y.; U.S.).

Grenada: *W. E. Broadway*, small tree along sea-shore, February, 1905 (Chi.; Gray; N.Y.).

Trinidad: *W. E. Broadway* 8996, shrub at sea-shore, Icacos, December 3, 1929 (N.Y.).

Tanganyika Territory: *H. J. Schlieben* 4394, shrub or small tree, very frequent, lower edge of forest zone, alt. 1,800 meters, south side of Kilimanjaro, December 29, 1933 (Chi.); *Stoltz* 82, Nyassa District, Kondeland, 1900 (Arn.).

Yunnan Province, China: *G. Forrest* 11234 (Arn.; Calif.); *Camillo Schneider* 2212, alt. *circ.* 2,800 meters, valley of Yangtze River near Taku toward Chungtien, August, 1914 (Arn.).

Philippine Islands: *Adduru* 8 *pro parte*, shrub 2 meters tall, at sea-shore, vicinity of Peñablanca, Cagayan Province, Luzon, May 1–June 18, 1917 (Chi.); *E. B. Copeland* 351, Davao, Distr. Davao, Mindanao, March, 1904 (N.Y.); *P. Cortes & M. D. Knapp* (*Forestry Bur. no.*) 23946, Panay, Prov. Capiz, May and June, 1915 (Arn.); *A. D. E. Elmer* 10452, Cagayan, Distr. Cagayan, Mindanao, April, 1909 (Arn.); *Elmer* 10452a, same place and date (Chi.); *Elmer* 12179, Magallanes (Mount Giting-giting), Sibuyan, Prov. Capiz, April, 1910 (Arn.; Chi.; Gray); (*distrib.* of) *Elmer* 16760, Irosin, Trosin (Mount Bulusan), Prov. Sorsogon, Luzon, July, 1916 (Arn.; Calif.; Chi.); *F. W. Foxworthy* 629, Palawan, March & April, 1906 (Gray; N.Y.); *H. Hallier* 231, years 1903 and 1904 (N.Y.); *Elmer D. Merrill* (*species Blancoanae n.*) 601, Tayabas Province, Luzon, March, 1914 (Chi.; N.Y.); *Merrill* 934, Caguray, Mindoro, April, 1903 (Gray; N.Y.); *Merrill* 2402, Pola, Mindoro, May, 1903 (N.Y.).

Guam: *Guam Experiment Station* 328 (N.Y.; U.S.); *R. C. McGregor* 460, October, 1911 (N.Y.; U.S.).

British North Borneo: *Mail* 8647, tree 21 feet tall, girth 12 inches, at Tg. Peras, native name *tukil-tukil bini*, September 17, 1933 (Arn.); *D. D. Wood* 1747, Balambangan Isl., May, 1928 (Arn.; Calif.).

Java: *Dr. Kollmann* 1838 (N.Y.).

Molucca Islands: *Hugo Curran* 327, on beach, 5 meters tall, Manipa Isl., May 5, 1940 (Arn.); *C. B. Robinson* 1 (representing "*Caryophyllaster litoreus*," *Rumphius* Herb. *Amboinense* 4: 110, *tab.* 50), Amboina, July–November, 1913 (Gray; N.Y.; U.S.).

Papua (New Guinea): *L. J. Brass* 866, at coast, large bush or small tree, common along foreshores, Port Moresby, December 80,

1925 (Arn.); *Brass* 1612, common name *lelechi*, Bomgwina, January 6, 1926 (Arn., 2 sheets); *Brass* 4711, tree 3–4 meters tall, alt. 2,840 meters, Murray Pass, Wharton Range, Central Division, June–September, 1933 (Arn.; N.Y.); *Brass* 6418, tree 3–5 meters tall, coast between Oriomo and Fly rivers, March 31, 1936 (Arn.); *Brass* 11397, sometimes in pure stands, up to 20 meters tall, trunk diameter up to 0.4 meter, alt. 2,200 meters, Bele River, 18 km. northeast of Lake Dabbuna, Dutch New Guinea, November, 1938 (Arn.; apparently a race or subforma of *f. repanda* growing to a colossal size and with leaves approaching some of those on Brass's material of *f. Schiedeana*); *Clemens* 5626, alt. 9,000 feet, Morobe Distr., March, 1937 (Arn.).

Bismarck Archipelago: *J. H. L. Waterhouse* 327, Gazelle Peninsula, October, 1934 (N.Y.).

Solomon Islands: *S. F. Kajewski* 2458, native name *ingele*, small tree up to 5 meters tall, at sea-level, in rain-forest, Berande, Guadalcanal Isl., January 16, 1931 (Arn.).

New Hebrides: *S. F. Kajewski* 120, shrub *circ.* 2 meters tall, in rain-forest, alt. 150 meters, Lenakel, Tanna Isl., June 3, 1928 (Arn.; N.Y.).

New Caledonia: *Balansa* 157, years 1868–1870 (Arn.); *Balansa* 2268, years 1868–1870 (Arn.); *I. Franc*, Prony (Arn.; U.S.).

Fiji Islands: *A. C. Smith* 1284, slender tree 3 meters tall, native name *usi*, Kambara, March 2–7, 1934 (Calif.; Gray; N.Y.; U.S.).

Samoa: *Erling Christophersen & E. P. Hume* 2364, alt. \pm 100 meters, shrub 1.5 meters tall, Manase Plantation, Isl. Savali, August 13, 1931 (Calif.; N.Y.); *Dr. Reinecke* 356, Savaii Isl., June, 1894 (U.S.); *United States Exploring Expedition* (U.S.); *F. Vaupel* 293, above Manase, June 23, 1905 (U.S.).

Society Islands: *United States Exploring Expedition*, 1838–1842 (N.Y.); *U. S. Explor. Exped.*, Isl. Tahiti (Gray; U.S.).

Australia: *C. E. Hubbard* 3478, in white sand, Hercules Bank, mouth of Brisbane River, Queensland, July 28, 1930 (Arn.); *Hubbard* 4448, on sand hills, Fraser Isl., Queensland, October 10–15, 1930 (Arn.); *J. H. Maiden & J. L. Boorman*, Norfolk Isl., New South Wales, November, 1902 (Gray); *Rev. N. Michael* 138, Flying-fish Point, North Queensland (Gray); *C. T. White* 6906, Hercules Bank, mouth of Brisbane River, July 27, 1930 (Arn.; N.Y.).

Specimens examined for *f. 2. Schiedeana* (Schlecht.) Radlk.:¹

¹ Radlkofer (*op. cit.* 647) cites also the states of Bahia, Rio de Janeiro, and São Paulo, Brazil, for *f. Schiedeana*.

Mexico: *G. Bossé* 8370, at Lago Coapilla and on road to Santa Rita, State of Chiapas, January 18, 1926 (Chi.); *George L. Fisher* 35441, tree 20 feet tall, alt. 2,306 meters, Tepoztlán, State of Morelos, July 14, 1935 (Chi.; N.Y.); *T. C. Frye & E. M. Frye* 3132, growing 6–12 feet tall, about 5 km. north of Taxco, State of Guerrero, January 17, 1941 (Calif.); *George B. Hinton* 4869, shrub 1.5–5 meters tall, native name *chapulixtle*, alt. 2,400 meters, Cajones la Angostura, Distr. of Temascaltepec, State of Mexico (Chi.); *Hinton et alii* 8974, shrub 4 meters tall, in lower oak belt, on hill, Rincón, same district, March 11, 1936 (Gray); *Liebmamn* 2193, Río de las Vueltas, May, 1842 (Chi.); *L. H. MacDaniels* 300, shrub 6–8 feet tall, alt. 5,500 feet, in fields along the Mexico City-Cuernavaca Road near Cuernavaca, State of Morelos, August 28, 1935 (Chi.); *E. W. Nelson* 6955, Volcán de Jorullo, State of Michoacán, March, 1903 (Gray); *J. N. Rose & Joseph H. Painter* 6955, Cuernavaca, September, 1903 (N.Y.); *Rose, Painter, & J. S. Rose* 8797 p. p., Pachuca, State of Hidalgo, July, 1905 (Chi.; Gray); *Caec. & Ed. Seler* 403, near Hochi, Distr. Cuernavaca, State of Morelos, December, 1887 (Gray); *Seler & Seler* 649, near Huejutla, State of Hidalgo, May, 1888 (Gray); *Seler & Seler* 4253, mountain slope, Distr. Hidalgo, State of Guerrero, May 18, 1904 (Gray); *Seler & Seler* 4435, Hacienda de Los Arcos, Zultepec, December 20, 1904 (Gray); *G. Woronow* 2823, Río Zumipimoto near Uruapan, State of Michoacán, January 21, 1926 (Chi.).

British Honduras: *Percy H. Gentle* 1775, Sibun River, Yucatan Peninsula, January 10, 1936 (N.Y.).

Guatemala: *W. A. Kellerman* 7627, alt. 1,500 feet, San Augustine, Sierra de las Minas, Dept. Baja Verapaz, January 12, 1908 (Chi.); *Julian Steyermark* 31292, shrub 20 feet tall, on dry, rocky glade slopes, alt. 1,200–1,500 meters, 3 miles southeast of Quezaltepeque, along Río Lucía Saso, vicinity of Montaña Cebollas, Montaña Castilla, Dept. Chiquimula, November 6, 1939 (Chi.).

Peru: *J. Soukup* 782, January, 1938 (Chi.).

Bolivia: *R. S. Williams* 190 p. p., bush, alt. 4,800 feet, Apolo, July 20, 1902 (N.Y.).

Isle of Pines (West Indies): *A. H. Curtiss* 263, near Nueva Gerona, January 1–February 4, 1904 (Chi.; Gray; N.Y., 2 sheets; U.S.).

British East India: *A. Saulière* 40, Kodaikanal Station, Pulney Hills, Madura District, Presidency of Madras, 1914 (N.Y.).

Timor: *Boscharchitect Koepang* 16, alt. 1,300 meters, April 10, 1935 (Arn.).

Papua (New Guinea): *L. J. Brass* 5053, tree 3–6 meters tall, alt. 2,400 meters, May–September, 1933 (Arn.; N.Y.); *M. S. Clemens* 475, in open woods, 10 feet tall, alt. 2,500 feet; on hills, below Satelberg, Morobe District, October 17, 1935 (Arn.); *Clemens* 4745, in open woods, alt. 5,000–5,500 feet, vicinity of Ogeramnang, Morobe District, December 24, 1936 (Arn.); *R. Schlechter* 19118, woods in Tinisterre District, Kaiser-Wilhelmsland, January 17, 1909 (Arn.; Chi.; U.S.).

Specimens examined for f. 3. *Burmanniana* (Schum. & Thonn.) Radlk.:

Mexico: *H. H. Bartlett* 10737, La Morita, vicinity of Marmolejo, Sierra de San Carlos, State of Tamaulipas, August 1, 1930 (Chi.; Gray); *Mary Taylor Edwards* 736, Jacala, State of Hidalgo, August 11, 1937 (Chi.); *G. M. Emrick* 109, Ostula, State of Michoacán, November, 1906 (Chi.); *Emrick* 214, Hacienda Coahuayula, State of Michoacán, February, 1901 (Chi.); *Dwight R. Furness*, Guanajuato (Chi.); *Howard Scott Gentry* 4276, slender shrub 1–3 meters tall, on open, rocky hill-slopes, in oak forest, alt. 4,000–5,000 feet, Cerro de la Giganta, Baja California, March 1, 1939 (Gray); *George B. Hinton* 295, shrub, Rincón, Distr. Temascaltepec, State of Mexico, February 22, 1932 (Gray); *Hinton* 10307, shrub 3 meters tall, San Antonio, Distr. Montes de Oca, State of Guerrero, 1937 (Chi.; N.Y.); *Hinton et alii* 11712, shrub 3 meters tall, on hill, San Antonio, same district, December 23, 1937 (Gray); *E. W. Nelson* 6087, Cerro la Silla, near Monterey, State of Nuevo León, March 20, 1902 (N.Y.); *Nelson* 6955, shrub 6–12 feet tall, Volcano Jorullo, State of Michoacán, March 28, 1903 (Gray); *Brother Nicolás*, Noria, State of Puebla, February (Chi.); *Nicolás* 5711, precise locality not stated, but collected somewhere in same state, i.e., Puebla, December 15, 1910 (N.Y.); *Cyrus Guernsey Pringle* 3461, San José Pass, State of San Luis Potosí, July 23, 1890 (Chi.); *J. N. Rose* 2406, near San Juan Capistrano, State of Zacatecas, August, 1897 (Gray; N.Y.); *J. N. Rose, Joseph H. Painter, & J. S. Rose* 8797 p. p., Pachuca, State of Hidalgo, July, 1905 (N.Y.); *H. W. Von Rozynski* 282, near Nogales, Jaumave, State of Tamaulipas, 1932 (Chi.; N.Y.); *Von Rozynski* 398, Jaumave, July, 1932 (Chi.; N.Y.); *Von Rozynski* 706, sierra near Victoria, Jaumave, 1932 (N.Y.); *H. H. Rusby* 110, State of Oaxaca, July 16, 1910 (N.Y.); *Caec. & Ed. Seler* 45, near Fortaleza de Mitla, Distr. Tlacolula, State of Oaxaca, June, 1888 (Gray); *Seler & Seler* 1525, above El Porian to the lower slopes of Cuauhtlillo, State of Oaxaca, November 27 and 28, 1895 (Gray),

where determined for this forma by Radlkofer); *Charles L. Smith* 824, alt. 5,500–6,000 feet, Monte Alban, near Oaxaca City, State of Oaxaca, September 5, 1894 (N.Y.); *Rev. Lucius C. Smith* 864, alt. 6,500–7,000 feet, hills of Telixtlahuaca, State of Oaxaca, October 18, 1895 (Gray).

British Honduras: *H. H. Bartlett* 11291, shrub 8 feet tall, on pine ridge, Cornhouse Creek, Manatee River, Belize District, January 31, 1981 (N.Y.).

Guatemala: *W. A. Kellerman* 7480, Los Amatos, Dept. Izabal, February 15, 1908 (Chi.; N.Y.); *Alexander F. Skutch* 1005 p. p., alt. 6,800 feet, San Miguel Acatan, Dept. Huehuetenango, August 18, 1934 (N.Y.); *Paul C. Standley* 62579, shrub 4–6 feet tall, abundant, in pine and oak forest, alt. *circ.* 1,800 meters, near Chalchitán, same department, January 14, 1939 (Chi.); *Standley* 62610, shrub 3–4 feet tall, common, in oak and pine forest, alt. 1,800–2,400 meters, mountains southwest of Malacatancito, same department and date (Chi.); *Standley* 65657, shrub 3–5 feet tall, abundant at 7,000 feet, on dry, rocky hillside, Sierra de los Cuchumatanes, above Chiantla, same department, February 19, 1939 (Chi.); *Julian A. Steyermark* 38305, shrub 5–8 feet tall, alt. 80–88 meters, in sand along Motagua River, between Los Amates and Quiriguá, Dept. Izabal, March 29, 1940 (Chi.).

Costa Rica: *H. E. Stork* 3158, shrub 15–20 feet tall, in open, oak forest, alt. 5,800 feet, vicinity of Santa María de Dota, San José, July 8, 1932 (Chi.); *Manuel Valerio* 1364, alt. 1,550 meters, Santa María de Dota, December 30, 1935 (Chi.).

Panama: *M. E. Terry* 1259, shrub 12–15 feet tall, alt. 5,500 feet, Salta, Boquete, Boquete District, Chiriquí Prov., January 8, 1939 (Chi.).

Colombia: *Ellsworth P. Killip* 11269 p. p., shrub, Restrepo, Cordillera Occidental, Dept. El Valle, September 16, 1922 (Gray; N.Y.); *Killip & Albert C. Smith* 19765 p. p., shrub 2–5 feet tall, on open hillside, alt. 2,700–3,400 meters, between Mutiscua and Pamplona, Dept. Norte de Santander, February 23, 1927 (Gray); *Francis W. Pennell* 1839, shrub, alt. 1,500–1,600 meters, on open slope, along road below Caqueza, Dept. Cundinamarca, September 7 and 8, 1917 (N.Y.).

Ecuador: *F. C. Lehmann* 4800, Ofia, Cuenca (Chi.; at Gray commixed with var. *arborescens* f. *spatulata*); *Ynes Mexia* 7047, spreading shrub, common, 1 meter tall, native name *chamana*, on open river terrace, alt. 1,200–1,500 meters, near Banos, March 6, 1935 (Chi.).

Peru: *Sawada* P. 120, San Rafael, Huanuco, October 28, 1927 (Chi.); *H. E. Stork & O. B. Horton* 10413, shrub, very common, called *chamana*, used as mattresses for beds, the gum sticking the twigs firmly together so that they make a solid unit, alt. 1,200-2,700 meters, Surcubamba-Salcabamba Trail, Prov. Tayacaja, Dept. Huancavelica, January 14, 1939 (Calif.; Chi.); *Stork & Horton* 10784, very common, sometimes a tree 4 meters tall, alt. from 2,500 down to 2,000 meters, at confluence of Río Chincheros and Río Pampas, Prov. Andahuaylas, Dept. Apurimac, March 1, 1939 (Calif.; Chi.).

Venezuela: *A. Fendler* 2545, near Tovar Colony, 1856-1857 (Gray); *Llewelyn Williams* 10107, shrub or small, slender tree, abundant on dry, open slopes, alt. 1,530 meters, Avila, Distr. Fed., May 19, 1938 (Chi., 2 sheets; approaching f. *Schiedeana*).

Brazil: *H. M. Curran* 631, Nova Friburgo, State of Río de Janeiro, December 9, 1918 (Gray); *A. Glaziou* 52, shrub, region of Copacabana, same state, March 14, 1862 (N.Y.); *Glaziou* 14580, shrub, State of Minas Geraes, December 16, 1884 (N.Y.); *Sello* 159 (Gray); *Weddel* 131 p. p., environs of Río de Janeiro, State of Río de Janeiro, 1843 (N.Y.).

Bolivia: *Otto Buchtien* 531, shrub or tree, alt. 2,100 meters, November 20, 1906 (N.Y.); *José Steinbach* 8602 p. p., alt. 2,800 meters, Comarapa, Dept. Santa Cruz, November 1, 1928 (Chi.).

Chile: *Guillermo Geisse*, Tulahuen (Ovalle), 1889 (Gray).

Argentina: *W. J. Eyerdam & A. A. Beetle* 22674, tree 8-10 meters tall, in sand and gravel along stream bank, in shade of forest, alt. 600 meters, Arroyo La Cantara, Cerro de Calilegua, Prov. Jujuy, October 19, 1938 (Calif.; Gray); *Eyerdam, Beetle, & E. Grondona* 23634, shrub 1-1.5 meters tall, in alluvial deposit on high, exposed cliffs, alt. 50 meters, Cerro La Peregrina, Prov. Buenos Aires, December 11, 1938 (Calif.; Gray); *P. G. Lorentz & G. Hieronymus* 1187, in the sierra between El Rincon and Clavisan, river district of Río del Tala, Prov. de Salta, December 11, 1873 (N.Y.); *S. Venturi* 2233, shrub 2-3 meters tall, alt. 500 meters, at edge of river gorge, Dept. Cruz Alta, Prov. Tucumán, October 12, 1923 (Calif.; Chi.; Gray); *Venturi* 9473, shrub 3 meters tall, alt. 900 meters, Sierra de la Candelaria, Dept. Candelaria, Prov. de Salta, September 15, 1929 (Gray; N.Y.).

Uruguay: *W. G. Herter* 5049, in dry, exposed, clay soil, alt. 200 meters, Sierra Animas, Dept. Maldonado, September, 1929 (Gray).

Abyssinia: *W. Schimper* 705, in mountains near Dscheladscheranne, native name *dasos*, November 3, 1839 (N.Y.).

Kenya Colony: *Edgar A. Mearns* 387 *p. p.*, alt. *circ.* 2,000 meters, between Oljoro-o-Nyon and Narok rivers, June 7 and 8, 1909 (N.Y.).

Tanganyika Territory: *H. J. Schlieben* 3609, shrub 2–4 meters tall, alt. 1,400 meters, savanna hills, Uluguri Range, Morogoro District, February 27, 1933 (Arn.).

South Rhodesia: *G. M. McGregor* M73/37, on Odzani River, Umtali District, May 23, 1937 (N.Y.).

Réunion: *G. de l'Isle* 566, shrub, in 1875 (Gray; U.S.).

China (see also Hainan below): *George Forrest* 11233, Yunnan (Arn.); *Forrest* 16868, Yunnan, 1917–1919 (Arn.); *Maire* 6291 (ser. B), among rocks, alt. 3,200 meters, Mea hong, Yunnan, August, 1910 (N.Y.); *Peter Siméon Ten* 184, erect shrub, 1.5 meters tall, near *tie so* bridge, vicinity of Pe Yen Tsin, northwestern Yunnan, June 18, 1916 (Arn.).

Hainan: *Chun & Tso* 44503, shrub 2 meters tall, in forest, Yaichow, December, 1932–1933 (Arn.; Chi.; N.Y.); *Chun & Tso* 44637, shrub 2 meters tall, on open slope, alt. 100 feet, Yaichow, December, 1932–1933 (Chi.; N.Y.); *S. P. Ko*, shrub 3 meters tall, in woods, Po-ting to Seven Finger Mountain, Lingshin, April 23, 1932 (Chi.; N.Y.); *S. K. Lau* 74, fairly common, 1.5 meters tall, in thicket, sandy soil, 2 cm. diam., Yeung Ling Shan, Ngai District, June 13, 1932 (Arn.; Calif.; N.Y.); *Lau* 1003, fairly common, on dry, level land, in clay meadow, 1 meter tall, Nodoa and vicinity, Tan District, February 3, 1933 (Arn.; N.Y.); *Lau* 3383, abundant on dry, gentle slope, sandy soil at roadside, erect, 3 meters tall and 6 cm. diam., Chim Fung Ling near Sam Mo Watt village, Kan-en District, March 8, 1934 (Arn.); *C. I. Lei* 396, shrubs, abundant, on dry, level land, sandy soil, roadside thicket, Woh Ham Shi and vicinity, Lam Ko District, February 23, 1933 (Calif.; N.Y.); *H. Y. Liang* 62898, shrub 2 meters tall, in open thickets, sandy places near seashore, Yaichow, Kwangtung, September 5, 1933 (N.Y.); *Liang* 65071, shrub 1 meter tall, on open slopes, at Hainan, February 21, 1934 (N.Y.); *Liang* 65348, shrub 2 meters tall, in thicket, same locality, February 27, 1934 (N.Y.); *Liang* 66009, shrub 2 meters tall, same locality, December 10, 1933 (N.Y.); *C. Wang* 32893, small shrub on mountain top, Kwangtung, July 8, 1933 (N.Y.); *Wang* 36485, small shrub, at Hainan, January 12, 1934 (N.Y.).

Indo-China: *J. & M. S. Clemens* 3210 *p. p.*, common dune shrub, Tourane (Turam) and vicinity, Annam (Anam), May–July, 1927

(Arn.); *A. Pételot* 6259, Prov. of Vinh, Annam, April, 1936 (Arn.); *C. B. Robinson* 1094, Nha-trang and vicinity, Annam, March 11-26, 1911 (N.Y.).

Malaya: *A. C. Maingay* 459/2 (Gray).

British East India: *Father Anglade*, alt. 1,000-8,000 feet, Kodai-kanal region, Pulney Hills, southern India (Arn.); *R. D. Anstead* 104, very common shrub "covering all the hilltops in South India," alt. 6,000 feet, Kotagiri, Nilgiri Hills, April, 1923 (Arn.); *Dr. Prain*, Coonoor, Nilgiri, February 11, 1899 (Arn.); *R. Wight*, exceedingly common in inland parts of the country, many expansive tracts of country being completely covered with it, Mysore (Kew); *E. H. Wilson*, bush 6-12 feet tall, in open country, Ootacamund, October 14, 1921 (Arn., 2 sheets).

Ceylon: *Thwaites* 1158 (Calif.; Gray).

Philippine Islands: *M. Adduru* 8 *pro parte*, shrub 2 meters tall, vicinity of Pefiablanca, Cagayan Prov., Luzon, June 29, 1917 (Arn.); elsewhere, e.g. Chi., material under this number is referable to *f. repanda*.

Java: *Blume*, in garden (N.Y.).

Papua (New Guinea): *L. J. Brass & Chr. Versteegh* 10494, rare tree of secondary forest, 10 meters tall, trunk 31 cm. diam., crown fairly small, bark 1 mm. thick, alt. \pm 2,600 meters, 9 km. northeast of Lake Habbema, Dutch New Guinea, October, 1938 (Arn.; approaching *f. Schiedeana*); *C. E. Lane Poole* 419, on grass lands and old farm lands near Menari, alt. 5,000 feet, February, 1923 (Arn.).

Fiji Islands: *Otto Degener* 14299, shrub 5-7 feet tall, in open, scrubby forest, alt. 2,500 feet, Nandarivatu, Tholo North, Viti Levu, February 9, 1941 (Arn.); *Degener* 14332, shrub 5 feet tall, in scrub, alt. 2,500 feet, native name *osi*, same locality, February 13, 1941 (Arn.); *Degener & Ordoñez* 13537, shrub 5 feet tall, in scrub, alt. 2,600 feet, Nandarivatu, November 20, 1940 (Arn.); *Degener & Ordoñez* 13703, shrub 4-5 feet tall, alt. 30 meters, in scrub, Rakiraki, Viti Levu, December 13, 1940 (Arn.); *Degener & Ordoñez* 13710, shrub 5 feet tall, in scrub, alt. 400 feet, northwest gulch of small, jagged range north of Lomolomo, Lautoka, Viti Levu, December 5, 1940 (Arn.); *W. H. Harvey*, November, 1855 (Gray); *Albert C. Smith* 826 *p. p.*, tree 4 meters tall, on exposed cliff head, alt. 150-350 meters, hills west of Mbutha Bay, Natewa Peninsula, Vanua Levu, December 21, 1933, native name *wosi* (Gray; U.S.).

Australia: *F. T. Freney*, Cooper's Plains, near Brisbane, Queensland, November, 1920 (Arn.); *Sabine Helms* 940, shrub on dune,

peninsula north of "The Entrance," Tuggerah *via* Wyong, New South Wales, 1922 (Arn.); *C. T. White* 1849, Burleigh Heads, south-east Queensland, November, 1921 (Arn.); *White* 6349, Traverston, mouth of Burru River, Queensland, 1929 (Calif.).

Dodonaea viscosa var. *a* *vulgaris* f. 4. *eriocarpaoides* f. nov.—
Ramuli ultimi hispiduli. Folia circumambitu variabilia (pro typo anguste elliptico- vel oblongo-lanceolata, utrinque acuminata, graciliter petiolata, minutissime ciliolata, 5–10.5 cm. longa et 0.8–1.7 cm. lata), saepe eis f. *Burmanniana* vel f. *angustifoliae* rarius eis f. *spatulatae* subsimilia. Inflorescentiae plus minusve hispidulæ, masculinæ plerumque numerosæ parvae densæ 1–2 cm. longæ.

Ultimate branchlets hispidulous. Leaves variable in outline (those on the type narrowly elliptic- or oblong-lanceolate, at both ends acuminate, slenderly petioled, very minutely ciliolate, 5–10.5 cm. long and 0.8–1.7 cm. wide), often subsimilar to those of f. *Burmanniana* or of f. *angustifolia* or more rarely to those of f. *spatulata*. Inflorescences more or less hispidulous; staminate ones commonly numerous, small, dense, 1–2 cm. long.

Specimens examined:

Mexico: *G. Andrieux* 488, Mitla, near Oaxaca, July (Gray); *Berlandier* 929, in mountains near San Carlos, November, 1831 (Gray; N.Y.); *Berlandier* 2359, same place and date (Gray; N.Y.); *Bourgeau* 312, Santa Fé, Valley of Mexico, July 26, 1865 (Gray); *V. H. Chase* 7156, shrub 8 feet tall, north of Jacala, State of Hidalgo, June 26, 1939 (Calif.); *Hartweg* 19, Mexico (Gray); *Ivan M. Johnston* 3849, shrub 5–7 feet tall, dense, infrequent, on gravelly plain, Puerto Escondido, Baja California, May 24, 1921 (Calif.; Chi.; Gray; N.Y.); *Nelson & Goldman* 7154, shrub 10–15 feet tall, alt. 2,000 feet, Yubai, Baja California, September 18, 1905 (Calif.); *Charles R. Orcutt* 3297, Veracruz, February 16, 1910 (Chi.; Gray); *Edward Palmer* 127 and 181, Nuevo León, February and March, 1880 (Gray; N.Y.); *C. C. Parry & Ed. Palmer* 96, Mexico, 1878 (Gray); *C. A. Purpus* 3169, vicinity of San Luis Tultitlanapa, Puebla, near Oaxaca, May–July, 1908 (Calif.; Chi.; Gray; N.Y.); *J. G. Schaffner* 306, San Luis Potosí, 1879 (Calif., leaves approaching or passing into those of var. *linearis* f. *arizonica*; N.Y.); *Schaffner* 709, in mountains, San Migue-lito, San Luis Potosí Valley, 1876 (type, Chi.); *Walther Schumann* 471, in mountains, Jaral; May 26, 1885 (Chi.; Gray); *Stephen S. White* 1647, low shrub, alt. about 2,500 feet, Cerro de la Silla, near Monterey, Nuevo León, June 30, 1939 (Gray).

In its strong tendency toward pubescence in the inflorescences and on the leaf-edges, this forma suggests var. *linearis* f. *arizonica*, to which it is indeed close. The leaves are mostly broader than in that forma, however, and when fairly large, as on the type, suggest small-leaved f. *Burmanniana* material. Some specimens have shorter leaves, these more spatulate and apically less acuminate to obtuse. Orcutt 3297, Nelson & Goldman 7154, and Johnston 3849 are such specimens.¹ Forma *eriocarpaidea* offers at times a resemblance to *Dodonaea eriocarpa* Smith and some of the many varieties, mostly Hawaiian, of that species. Its geographic range, as far as known, extends from the northern border of the State of Oaxaca northward along the eastern part of Mexico, but must include the somewhat remote localities farther west, cited for Baja California. In this latter region occur additional specimens that appear to constitute a new forma referable to a place next to f. *Ehrenbergii* under var. *arborescens* (and described below as f. *hispidula*).

Dodonaea viscosa var. β *linearis* (Harv. & Sond.) Sherff, Amer. Journ. Bot. 32: 214. 1945 et f. *linearis* Sherff loc. cit. *Dodonaea linearifolia* Linden Pl. Cub. num. 2070 (annis 1841-1846) et apud Turcz. Bull. Mosc. 31': 407. 1858. *Dodonaea linearis* E. Mey. in Hb. Drège, Flora 26", Beigabe p. 179. 1843. *Dodonaea Thunbergiana* var. *linearis* Harv. & Sond. Fl. Cap. 1: 242, sub num. 2. 1859-1860.

Dodonaea viscosa has, in addition to the var. *vulgaris* f. *eriocarpaidea* just described, three more or less easily recognizable formae with proportionately narrower or more elongate leaves than is usually the case in such varieties as var. *vulgaris* and var. *arborescens*. These forms have been referred rather commonly to var. *angustifolia* Benth., mentioned above as having been retained by Radlkofer for certain Brazilian material. However, Benthams's epithet, published in 1863, was antedated for varietal status by var. *linearis* Harv. & Sond., published at least three years earlier.

Typical var. *linearis*, which may be designated (in the sense of a forma) as f. *linearis*, is found in South Africa, the West Indies (islands of Cuba and Haiti), northwestern Mexico, etc. It has linear leaves, these short (± 5 cm.) or long ($\pm 7-11$ cm.). Its inflorescence has the branchlets glabrous to sparsely setulose; otherwise it might be mistaken in many cases for f. *arizonica* (*vide infra*).

¹ It must be pointed out that the assignment of f. *eriocarpaidea* to var. *vulgaris* is arbitrary. It might with almost equal reason be made to var. *linearis* or to var. *arborescens*.

Specimens examined for f. 1. *linearis*:

Mexico: *Roxana S. Ferris* 8807, dominant shrub on slopes above flat, cultivated river valley, 2 miles north of Imuris on Nogales Highway, State of Sonora, March 24, 1934 (N.Y.); *H. S. Gentry* 1120, shrub 5 or 6 feet tall, in arroyo, Conejos, Río Mayo, State of Sonora, October 26, 1934 (Chi.); *E. A. Goldman* 230, near Batopilas, State of Chihuahua, October 8, 1898 (N.Y.); *C. V. Hartman* 84, shrub 6–12 feet tall, alt. 5,100 feet, Cochuto, State of Sonora, October 4, 1890 (N.Y.); *Hartman* 204, shrub 4–8 feet tall, alt. 3,450 feet, Oputo, State of Sonora, November 1, 1890 (Gray); *Ivan M. Johnston* 4819, erect shrub, single plant under palm, San Pedro Bay, State of Sonora, July 7, 1921 (Calif.; Chi.; Gray; N.Y.); *I. Knobloch* 5627, Mojáracich, State of Chihuahua, October 23, 1938 (Chi.); *Harde LeSueur*, Río Bonito, State of Chihuahua, August 25, 1936 (Chi.); *Edward Palmer* 143, Hacienda San Miguel, near Batopilas, State of Chihuahua, September, 1885 (Gray; N.Y.); *Palmer* 247, alt. 7,000 feet, mountains above Batopilas, November, 1885 (Gray); *Forrest Shreve* 6646, at 11 miles west of Cucurpe, State of Sonora, September 13, 1934 (Gray); *Rose, Standley, & Russell* 12804, Sierra de Alamos, State of Sonora, March 14, 1910 (Gray; N.Y.); *Stephen S. White* 400, shrub, about 5 miles north of Montezuma, State of Sonora, July 1, 1938 (Gray); *White* 514, small, slender shrub, Santa Rosa Canyon, near Bavispe, State of Sonora, July 15, 1938 (Gray); *Ira L. Wiggins* 6480, main canyon east of La Palma, 50 miles north of Guaymas, in Sierra Libres, State of Sonora, March 9, 1933 (Calif.; Chi.; N.Y.).

Ecuador: *A. Rimbach* 612 p. p., small shrub on dry hills, alt. 2,700 meters, interandine highland near Riobamba (N.Y.).

Cuba: *Eugenio Cuesta* 1079, Prov. Pinar del Río, April, 1915 (N.Y.); *Linden* 2070 (Gray, type collection of *Dodonaea linearifolia* *Linden apud Turcz.*); *C. Wright* 3525, in 1865 (Gray).

Haiti: *L. R. Holdridge* 1009, tree about 4 meters tall, alt. 350 meters, Port au Prince, February 18, 1942 (U.S.); *E. C. Leonard* 8967, slender shrub about 12 feet tall, in dry thicket on slopes, alt. 825–900 meters, south of Ennery, Dept. L'Artibonite, January 19, 1926 (Calif.; Gray; N.Y.; U.S.); *Leonard* 8985, slender shrub up to 12 feet tall, in dry, rocky thicket near summit of mountain southeast of Ennery, January 19, 1926 (U.S.).

South Africa: *Dr. Burchell* 4900 (Gray); *J. F. Drège*, in 1843 (N.Y.); *Drège* 7532a (Gray; N.Y.); *L. M. Kapp*, native name

Jjsterbosch, mountain slopes near Uniondale, District of Uniondale, Pretoria, July, 1921 (Arn.); *Otto Kuntze*, alt. 300 meters, Cogmanskloof, Cape Colony, February 2, 1894 (N.Y.); *Macowan* 717, alt. about 900 feet, on slopes of Nieuwe Kloof Mountains, near Tulbagh, October, 1886 (Gray); *F. A. Rogers* 30100, alt. 1,800 feet, Grahamstown, Distr. Albany (Arn.); *W. A. & C. B. Setchell*, "Eistenbosch" Karroo, beyond Montague Pass on way to Oudtshoorn, Cape Province, May 11, 1927 (Calif.); *J. Thode* A1101, Enon, Cape Colony, November, 1926 (N.Y.).

Réunion: *G. de l'Isle* 627, Mount St. Denis, 1875 (Gray).

Formosa: *Abbé Urbain Faurie* 48, on Mount Taitum, June 30, 1903 (Arn.); *A. Henry*, Takow (N.Y., 2 sheets); *Playfair* 97 (Arn.); *E. H. Wilson* 10975, by seashore, abundant, Bonjo to Kuram, Prov. Koshun, November 14, 1918 (Arn.).

Australia: *J. L. Boorman*, Baan Baa, New South Wales, November, 1914 (Calif.); *Fraser*, New South Wales, 1818 (Arn., 2 sheets); *J. H. Maiden*, Mount Warrah, New South Wales, October, 1897 (Arn.); *C. T. White* 1720, Silverwood near Warwick, East Queensland, September, 1922 (Arn.; Calif.).

Dodonaea viscosa var. β *linearis* f. 2. *angustifolia* (Benth.) Sherff, Amer. Journ. Bot. 32: 214. 1945. *Dodonaea angustifolia* L. f. Suppl. Pl. Syst. Veg. 218. 1781. *Dodonaea angustifolia* Swartz, Observ. Bot. 150. 1791. *Dodonaea viscosa* var. *angustifolia* Benth. Fl. Austral. 1: 476. 1863.

Dodonaea viscosa var. *angustifolia* Benth. was founded upon *D. angustifolia* Swartz (Observ. Bot. 150. 1791), a plant inhabiting "montes frigidiores Jamaicæ" (fide Swartzii). But the younger Linnaeus had already described (*loc. cit.*) a *Dodonaea angustifolia* from southern India. With both Linnaeus (f.) and Swartz, the leaves were "lanceolato-linearia." The two concepts were undoubtedly identical and have been so regarded by numerous authors. However, Swartz's name was of course a homonym and, under the International Rules (edit. 3, art. 61. 1935), was illegitimate.¹ For this or comparable reasons, some American authors have rejected the epithet *angustifolia*, no matter for what status it was used by writers subsequent to Swartz. It must be observed here, however,

¹ A homonym may be "generally treated as a synonym on taxonomic grounds" (Internat. Rules *loc. cit.*) and still be a homonym. The essential requirement of a homonym is that it duplicates a name previously and validly published for a group of the same rank based "on a different type."

that under the same International Rules (art. 69, examples, *sub Talino polyandro* Hook.) the illegitimacy of the name *angustifolia*¹ for the concept as held by Swartz does not invalidate its use by Bentham and subsequent workers for a varietal status. The combination *Dodonaea viscosa* var. *angustifolia* Benth., even though Bentham cited Swartz's specific binomial, "is treated, not as a new combination, but as a new name." No parenthetical citation of "Swartz" is called for, therefore, before "Benth."

Radlkofeř, in his classical study of *Dodonaea*, retained the var. *angustifolia* Benth. under *D. viscosa* and redescribed its leaves as "lineari-lanceolata vel sublinearia" to include a wider range of specimens. He made no attempt to describe subordinate formae.² If we return to the concept as held by Bentham, however, we see that it evidently related to broader-leaved material than f. *linearis* and was intended to include the plants with leaves varying from linear-lanceolate to linear-ob lanceolate. It is represented by *Dodonaea jamaicensis* DC. as interpreted in Britton, Fl. Bermuda 225 and illustr. 1918. The forma *angustifolia* is by far the most widely distributed and abundant forma of var. *linearis*. At times it approaches var. *vulgaris* f. *Burmanniana* and var. *arborescens* f. *spatulata*.

Specimens examined for f. 2. *angustifolia*:

Florida: Charles Henry Baker 547b, alt. ± 15 feet, Volusia County, November 20, 1918 (Gray); A. H. Curtiss 485 p. p., sand ridges between the ocean and Indian River, September (Chi.; Gray; N.Y., 2 sheets); Francis Duckett 236, in tropical pineland, Miami, December 6, 1933 (Calif.; Chi.; N.Y.); A. Fredholm 5603, hammock, Brevard

¹ We may note that N. L. Britton, who had a very extensive acquaintance with *Dodonaea* in the field for many of the West Indies islands, rejected the Swartz epithet *on numerous herbarium sheets* (in Herb. N.Y.) as "not *D. angustifolia* L.f." and then in place of *D. angustifolia* Sw., used the name *D. jamaicensis* DC. Britton used also *in his publications* (e.g., Fl. Bermuda 225, 1918) the name *D. jamaicensis* DC. He was undoubtedly actuated by at least two considerations: (1) Because Linnaeus f. and Swartz were concerned with plants from opposite sides of the earth, it might be presumed that the plants were taxonomically different; (2) Britton, in later life, was averse to recognizing nomenclaturally any entities lower than species (I rely here not only upon his published works but upon several conversations that I had with him, especially in the summer of 1918, when he was bringing to a close the revisional work incident to the second edition of Britton and Brown's Illustrated Flora [Illustr. Fl. N. U.S. etc., 3 vols. 1918]). Judging the common *angustifolia* form as seen in the West Indies to be distinguishable from *D. viscosa* in the latter's narrower sense, he wished to retain it in his botanical works. He therefore construed it as a species. He rejected the Swartz homonym and adopted the later name, *D. jamaicensis*.

² There was no occasion to do so, since he was concerned at the time with the Brazilian flora and since Brazil apparently was not known to produce other than the typical forma of var. *angustifolia*.

County, November 25, 1902 (Gray); *A. P. Garber*, Miami, April, 1877 (Gray); *H. J. Koehler* 47, Polk or De Soto County, 1925 (Gray); *J. B. McFarlin* 8113, Lake Jackson, July 30, 1934 (N.Y.); *Harold N. Moldenke* 514, shrub about 4.5 feet tall, grassy field near Brickell Hammock, Dade County, January 31, 1930 (N.Y.); *J. K. Small & J. J. Carter* 1480, in hammocks, Miami, October 28–November 28, 1903 (N.Y.); *Small & Carter* 2588, pinelands between Homestead and Camp Jackson, November 1, 1906 (N.Y.); *Small & Carter* 3071, pinelands, island east of Naranja, January 14, 1909 (N.Y.); *Small & Carter* 3168, pinelands, Long Key (Everglades), January 18–26, 1909 (N.Y.); *Small, Carter, & G. K. Small*, pinelands, Big Pine Key, February 27, 1911 (N.Y.); *Small, Carter, & Small* 3283, Brickell Hammock, south of Miami, February, 1911 (N.Y.); *J. K. Small & J. B. De Winkeler* 9069, sandhills east of Sebring, May 1, 1919 (N.Y.); *J. K. Small & G. V. Nash* 90, Miami, October 27–November 13, 1901 (N.Y.); *Small & Small* 4783, pinelands south of Miami River, November 26–December 20, 1913 (N.Y.); *S. M. Tracy* 7481 p. p., Sanibel Isl., May 15, 1901 (Chi.; Gray; N.Y.).

Revillagigedo Islands: *A. W. Anthony* 390, Socorro Isl., March–June, 1897 (Gray); *Anthony* 412, Clarion Isl., March–June, 1897 (Chi.; Gray; N.Y.); *F. E. Barkelew* 188, San Benedicto Isl., May 27–July 3, 1903 (Gray; N.Y.); *John Thomas Howell* 8863 *pro parte*, Sulphur Bay, Clarion Isl., March 23, 1932 (Chi.; Gray); *Herbert L. Mason* 1551, top of sea-cliffs, Clarion Isl., April 26, 1925 (Gray); *Mason* 1621, Grayson's Cove, Socorro Isl., May 4, 1925 (Chi.).

Mexico: *Brother Arsène*, Cerro de Santa Maria near Puebla, State of Puebla, November 17, 1909 (N.Y.); *Arsène* 8863, alt. 2,280 meters, San Angel: Pedregal, Distr. Fed., July 3, 1913 (Chi.); *Bourgeau* 3012, Valley of Mexico, same date (N.Y.); *Dr. Coulter* 867, Zimapán, State of Hidalgo (Gray); *Leon Diquet*, barranca du Río Santiago, State of Jalisco, December, 1899 (N.Y.); *E. Langlassé* 102, shrub about 3 meters tall, forming a large forest ("forêt") in volcanic sand, alt. 1,000 meters, at foot of Volcán de Yorullo (Mount Jorullo), State of Michoacán, April 13, 1898 (Gray); *E. Lyonnet* 17, Lomas, Distr. Fed., September, 1927 (Gray; N.Y.); *E. Matuda* 2015, Santa Rita, Mapastepec, State of Chiapas, January, 1938 (N.Y., 2 sheets); *Seemann*, Sierra Madre (Gray).

British Honduras: *Percy H. Gentle* 1775, shrub, edge of pineland, Gracie Rock, Belize District, January 10, 1936 (Chi.); *M. E. Peck* 34, pine ridge near Manatee Lagoon, June 11, 1905 (Gray); *Peck* 960, same place, August 7, 1906 (Gray).

Colombia: *E. P. Killip* 11269 *pro parte*, shrub, Cordillera Occidental, Restrepo, Dept. El Valle, September 16, 1922 (N.Y.); *Killip & Albert C. Smith* 19765 *pro parte*, shrub 2-5 feet tall, open hillside, alt. 2,700 meters, between Mutiscua and Pamplona, Dept. Norte de Santander, February 23, 1927 (N.Y.).

Venezuela: *Alfredo Jahn* 807, alt. 2,700 meters, Merida, January 22, 1922 (N.Y.); *Otto Kuntze* 1631, alt. \pm 7,500 feet, at head of Silla River (N.Y.); *E. H. Pittier* 211, tree 2-3 meters tall, Heights of Galipan, in savanna, near Caracas, December 19, 1921 (Gray); *Padre Cornelio Vogl* 104, tree about 7 meters tall, alt. 1,500-2,400 meters, south slope of Cerro Avila, Distr. Fed., August 30, 1939 (Chi.).

Ecuador: *Ed. André* K.580, Cisne (Chi.; Gray; N.Y.); *Erica Heinrichs* 22, shrub 9 dm. tall, alt. 2,650 meters, everywhere even to 3,000 meters, stony slope on the Río Ambato, November 1, 1932 (N.Y.); *Albert S. Hitchcock* 21582, much branched shrub 2-4 feet tall, common on dry slopes in hot river valleys, often dominant, alt. 2,700-3,300 meters, between Ofia and Cuenca, Prov. Azuay, September 9 and 10, 1923 (Gray); *Hitchcock* 21720, shrub 3 feet tall, common on dry slope, alt. 2,600 meters, Ambato, Prov. Tungurahua, September 21, 1923 (Gray; N.Y.); *C. William Penland & Robt. H. Summers* 77, alt. 1,750 meters, along Pastaza River at Baños, Prov. Tungurahua, March 14, 1939 (Chi., approaching var. *vulgaris* f. *repanda*); *A. Rimbach* 612 p. p., small shrub, dry hills, alt. 2,700 meters, near Riobamba, 1935 (Chi.); *Rose, Pachano, & Rose* 23810, vicinity of Cuenca, September 17-24, 1918 (N.Y.); *R. Spruce* 4978, Andes Mountains, 1857-1859 (Gray; N.Y.).

Peru: *O. F. Cook & G. B. Gilbert* 737, alt. *circ.* 3,000 meters, native name, *Chamana*, Ollantaytambo, May 16, 1915 (Chi.; Gray; N.Y.); *Ryozo Kanehira* 64, Huánuco, Dept. Huánuco, January 10, 1927 (Chi.); *E. P. Killip & A. C. Smith* 21818, shrub 2-4 feet tall, in clefts of bare rock, open hillside, alt. 3,000-3,200 meters, Tarma, Dept. Junín, April 20-22, 1929 (Chi.; N.Y.); *J. Francis Macbride* 3335, common shrub on stony western slopes, alt. *circ.* 9,000 feet, Mito, April 8-18, 1923 (Chi.); *H. E. Stork & O. B. Horton* 10095, shrub 1-1.5 meters tall, in shrub-lands, clay soil, alt. 2,800 meters, native name *Chamana*, leaves mixed with coca if latter is too strong, Sucse River Valley west of Socota, Prov. Cutervo, Dept. Cajamarca, December 9, 1938 (Chi.); *C. Vargas* 474, environs of Cuzco, in clayey, rocky places, alt. 3,000 meters, Paruro, July, 1937 (Calif.; Chi.).

Vargas 475, in clayey and rocky places, vicinity of Abancay, Dept. Apurimac, August, 1937 (Chi.).

Brazil: *Claussen* 27, in 1842 (N.Y.); *Alb. Loefgren* 10386, Sorocaba, Sao Paulo, October 27, 1887 (N.Y.); *L. Riedel & B. Luschnath* 509, February-July, 1832 (N.Y.); *Radlkofer*, *loc. cit.* 647, puts this under var. *vulgaris* f. *Burmanniana* but it seems slightly closer to f. *angustifolia*); *Weddel* 131 p. p., vicinity of Rio de Janeiro, 1843 (N.Y., 2 sheets).

Bolivia: *Otto Buchtien* 93, alt. 3,300 meters, La Paz, April 10, 1901 (Gray); *Buchtien* 138, shrub 2 meters tall, alt. 2,650 meters, Cotaña, November, 1911 (Chi.; Gray; N.Y.); *M. Cárdenas* 2124, shrub 1 meter tall, on stony river-sides, alt. 2,000 meters, Mizque, Cochabamba, June, 1940 (Gray); *Cárdenas* 2845, shrub 2-3 meters tall, in rocky and very dry soil, alt. 1,600 meters, Cordillera of Tucahuasi, Dept. Santa Cruz, native name *chakatea*, August, 1934 (Chi.); *B. A. Krukoff* 10707, shrub 30 feet tall, alt. 1,500-1,600 meters, vicinity of Tajma (near Chulumani), Prov. S. Yungas, Dept. La Paz, August 26 and 27, 1939 (Chi.; N.Y.); *Otto Kuntze*, alt. 3,000 meters, Rio Tapacari, March 19, 1892 (N.Y.); *G. Mandon* 772, dry places, woods, alt. 2,600 meters, Challapampa, vicinity of Sorata, Prov. Larecaja, December, 1857 to May, 1858 (Gray; N.Y.); *H. H. Rusby* 101, alt. 5,500 feet, vicinity of Canamina, July 15, 1921 (Gray; N.Y.); *José Steinbach* 8602 p. p., alt. 2,800 meters, Comarapa, Dept. Santa Cruz, November 1, 1928 (Gray); *C. White*, alt. 3,500 feet, vicinity of Espia, head of Bopi River, July 22, 1921 (N.Y.); *R. S. Williams* 190 p. p., bush 8 feet tall, trunk 2 inches in diam., alt. 4,800 feet, Apolo, April 15, 1902 (N.Y.).

Argentina: *S. Venturi* 8769, shrub about 2 meters tall, alt. 1,000 meters, Candelaria, Dept. Candelaria, Prov. Salta, May 26, 1929 (Gray).

Uruguay: *Guil. Herter* 701b (5229), 3 meters tall, in dry, stony field, alt. 100-200 meters, native name *chilca*, Pan de Azúcar, Dept. Maldonado, October, 1907 (N.Y.); *W. G. Herter* 701c, growing 2-3 meters tall, in dry, stony, clay soil, alt. 200 meters, Sierra Animas, Dept. Maldonado, September, 1929 (N.Y.).

Bermuda: *Stewardson Brown* 608, hillsides, St. David's Isl., February 10-March 9, 1908 (Chi.; Gray; N.Y.; U.S.); *Brown* 668, Tucker's Town, May 22-June 2, 1909 (Gray; N.Y.; U.S.); *Brown & N. L. Britton* 138, sand-hills, Paget, August 31-September 20, 1905 (Chi.; Gray; N.Y.; U.S.); *Brown & Britton* 823, sand-hills, Castle Point, August 27-September 21, 1912 (N.Y.); *Brown & Britton* 1022,

hillside near Bassett's Caves, August 27—September 21, 1912 (N.Y.); *Brown & Britton* 1043, cay east of Trunk Isl., Harrington Sound, August 27—September 21, 1912 (N.Y.); *Brown & Britton* 1061, hillside, Cooper's Isl., August 27—September 21, 1912 (N.Y.); *Brown & Britton* 1068, south end of St. David's Isl., August 27—September 21, 1912 (N.Y.); *F. S. Collins* 36, hillside near Flatts, May 3, 1912 (Gray); *Collins* 226, native name *dogbush*, Walsingham, August 17, 1913 (Chi.; Gray; N.Y.); *T. J. Harris* 426, April 15, 1906 (Chi.; N.Y.; U.S.); *J. W. Harshberger*, limestone sinks, Walsingham, June 16, 1905 (N.Y.); *C. F. Millspaugh* 67, opposite Hamilton, December 29 and 30, 1898 (Chi.); *Millspaugh* 85, Walsingham, December 31, 1898 (Chi.); *Albert Hanford Moore* 2861, dry soil, roadside, St. David's Isl., July 8, 1905 (Chi.; Gray).

Cuba: *N. L. Britton & Percy Wilson* 5589, coastal thicket, Casilda, Prov. Santa Clara, March 16, 1910 (N.Y.; U.S.); *N. L. Britton, E. G. Britton, & Wilson* 15718, bucida thicket, vicinity of Columbia, Isle of Pines, March 19—21, 1916 (Chi.; N.Y.; U.S.); *J. G. Jack* 8669, cult., 6—8 feet tall, in Harvard Univ. Bot. Garden, from Santa Clara Prov., February 13, 1933 (N.Y.); *O. E. Jennings* 276B, Isle of Pines, May, 1910 (N.Y.); *Jennings* 2267, in wet, sandy soil at west base of Mount Colombo, Isle of Pines, May 14, 1910 (Gray; U.S.); *Leon & Edmond* 8567, in thickets, Sabana de Motembo, Prov. Santa Clara, January 4, 1919 (U.S.); *Antonio Luna* 22, Lomas de Banao, Santa Clara, January 9, 1920 (N.Y.); *Luna* 7668, mountains of St. Spiritus, Loma La Gloria, Gavilanes, January, 1918 (N.Y.); *Elizabeth R. Mitchell* 5, shrub 5 feet tall, in red soil with much iron, on dry hilltop, alt. 2,000 feet, Nipe Mountains, Prov. Oriente, March 1, 1928 (Gray; U.S.); *Leon & Roca* 7982, alt. 900 meters, Loma la Gloria, Banas Mountains, Prov. Santa Clara, July 30, 1918 (U.S.); *J. A. Shafer* 2981, slender shrub 3—6 feet tall, forming thickets after fire; pine lands, Sierra Nipe, near Woodfred, Prov. Oriente, December 4, 1909 (Chi.; N.Y., 2 sheets; U.S.); *Shafer* 3590, tree 18 feet tall, trunk diam. 8 inches, open pine woods, alt. 500—650 meters, Sierra Nipe, near Woodfred, December 18, 1909 (Chi.; N.Y.; U.S.); *Shafer* 11985, slender shrub 6—8 feet tall, on blue serpentine, in thicket, Bahia Honda to El Rosario, Prov. Pinar del Rio, January 29, 1912 (Chi.; N.Y.; U.S.); *Shafer* 12433, shrub 6 feet tall, dry hillside, Holquin, Prov. Oriente, April 4, 1912 (N.Y.); *C. Wright* 2172, Palenque, 1860—1864 (Gray); *Wright* (similarly) 2172, in 1865 (N.Y.; U.S.).

Santo Domingo: *W. L. Abbott* 1942, alt. 600 to 850 meters or less, Maniel Viejo, Prov. de Barahona, March 7—10, 1922 (U.S., 2 sheets);

E. L. Ekman H9294, alt. 1,100 meters, Haiti, November 13, 1927 (U.S.); *Miguel Fuentes* 189, alt. 50 meters, at Palomino Rivulet, near Barahona, Prov. Barahona, 1912 (Chi., where approaching *f. linearis*; Gray); *Jaeger* 78, Haiti (N.Y.); *E. C. Leonard* 4274, alt. about 1,300 meters, vicinity of Furcy, Haiti, May 26-June 15, 1920 (approaching *f. spatulata*; Gray; N.Y.; U.S.); *E. C. Leonard & Genevieve M. Leonard* 14995, slender tree 15 feet tall, alt. 630-1,500 meters, Moustique Mountains, vicinity of Bassin Bleu, Haiti, April 21, 1929 (N.Y.; U.S.); *George V. Nash* 1762, shrub or small tree, 8-12 feet tall, alt. 3,000 feet, mountain slope, La Brande to Mount Balance, Haiti, August 15, 1905 (N.Y.); *H. von Tuerckheim* 2970, near Constanza on dry slopes, February, 1910 (Chi.; Gray; N.Y.; U.S.); *E. J. Valeur* 851, tree, open soil, native name *Palo de Reina*, alt. 3,000-4,000 meters, Moncion, Prov. Monte Cristy, April 18, 1933 (N.Y.; approaching *f. spatulata*); *Valeur* 910, tree, native name *Palo de Reina*, Loma Bajita, Dominican Republic, June 9, 1933 (N.Y.).

Jamaica: *R. C. Alexander*, Siguanea Hills, 1850 (N.Y.); *N. L. Britton* 1098, Malvern to Stanmore Hill, Santa Cruz Mountains, September 3, 1907 (Chi.; N.Y.; U.S.); *E. Campbell* 5887, alt. 400 feet, King's House, September 9, 1895 (Chi.; U.S.); *J. Arthur Harris & John V. Lawrence* C1598, leeward slopes, Cinchona, Blue Mountains, 1915 (N.Y.; U.S.); *William Harris*, September 9, 1895 (Chi.); *Wm. Harris* 8578, Cinchona, May 27, 1903 (Chi.; N.Y.); *Wm. Harris* 9658, alt. 2,200 feet, Malvern, 1907 (Chi.; N.Y.; U.S.); *Wm. Harris* 11753, shrub or small tree up to 15 feet tall, alt. 300-900 feet, Lititz Savanna, 1914 (Chi.; Gray; N.Y.; U.S.); *John Hart* 2025, in 1886 (Chi.; U.S.); *Mr. March* 240 (N.Y.); *William R. Maxon* 1197, on shaded banks, alt. 1,500 meters, Cinchona, April 17, 1903 (Chi.; U.S.); *Maxon* 1342, alt. 1,500 meters, vicinity of Cinchona, March 22, 1920 (Chi.); *Maxon* 1506, shrub 10 feet tall, near Green River on trail from Cinchona to Blue Mountain Peak, April 22, 1903 (U.S.); *Maxon & Ellsworth Killip* 581, on open, shady slopes, alt. 1,475 meters, vicinity of St. Helen's Gap, St. Andrew, March 4, 1920 (Chi.; Gray; U.S.); *Maxon & Killip* 1342, alt. 1,500 meters, vicinity of Cinchona, March 22, 1920 (Gray; U.S.); *George Nichols* 170, wood borders, alt. 5,000 feet, Cinchona, July 27, 1903 (Chi.; Gray; N.Y.; U.S.); *C. R. Orcutt* 3055, Arntully, September 26, 1927 (U.S.); *Orcutt* 5118, Arntully (Calif.; U.S.); *J. R. Perkins* 1238, Blue Mountains, Portland, April 5, 1916 (Gray); *Forrest Shreve*, on dry slopes, Cinchona, May, 1908 (N.Y.).

Puerto Rico: *Oersted* 2994, on Mount Candelaria, February, 1847 (Chi.).

Pretoria: *O. B. Miller* (Forest Dept. Herb. no.) 4081, on abandoned forest lands, 5 feet tall, important in promoting regeneration, Distr. Flagstaff C. P., April, 1922 (Arn.).

Arabia: *Botta*, Taifa, 1838 (N.Y.); *G. Schweinfurth* 743, Mahsabe bei Wolledje, January 19, 1889 (Gray).

Iraq: *Yusuf Lazar* 558, near Bagdad, March, 1935 (Chi.; Gray).

Persia: *J. Bornmüller* 655, March 12, 1893 (Arn.).

Afghanistan: *East India Company* 1021/1 (Gray).

British East India: *Bis Ram* 436, native name *santha*, Camp Ana, Salt Range, Punjab, 1928 (Arn.; N.Y.); *R. R. Stewart* 1076, cult. as hedge, Pathankot, Punjab, February 8, 1917 (Arn.); *R. Strachey & J. E. Winterbottom*, alt. 1,500 feet, Simla Hills, Himalaya (Gray); *T. Thomson*, alt. 1-2,000 feet, northwest Himalaya (Gray); *Mrs. Kanoth Yeshoda* 78, alt. 3,000 feet, Hosur Taluk, Distr. Salem, south India, October 9, 1931 (N.Y.); *Mrs. Yeshoda* (similarly) 78, same place, May 24, 1932 (Arn.); *Mrs. Yeshoda* 78A, same place, January 15, 1932 (N.Y.).

China (including Hainan): *Luetta Chen* 52A, growing 3.5 feet tall, Kushan Monastery near Foochow, Fukien, October 4, 1935 (Arn.); *N. K. Chun & C. L. Tso* 43932, tree 5 meters tall, trunk diam. 10 cm., alt. 2,400 feet, in thickets, Dung Ka, Hainan, September 25, 1932 (N.Y.); *H. H. Chung* 4677 and 5486 (N.Y.); *Chung* 4932, shrub at top of hill, Amoy, Nanputo, Fukien, June 5 (Arn.); *Chung* 7402, Fukien Province (Chi.); *Fortune* 24, in 1845 (Gray); *J. Linsley Gressitt* 1765, shrub 1 meter tall, on partly wooded hill, alt. 250 meters, Kakchieh, Swatow, East Kwantung, August 8, 1936 (Arn.); *S. K. Lau* 2832, fairly common on dry, gentle, sandy slope, in thicket, 3 meters tall, trunk 3 cm. diam., Ka Chik Shan and vicinity, Ch'ang-kiang Distr., Hainan, December 15, 1933 (Arn.); *T. N. Liou* 1596, Amoy, Kulangyti, Fukien, September 1, 1930 (N.Y.); *F. A. McClure*, herb. no. 7933, Hainan, 1921-1922 (Arn.); *T. Thomson* 1450, grassy hills, Isl. Kulungsu, over against Town of Amoy, August, 1865 (Gray); *Tsang Wai Tak* 202, behind Hui Ka, Lin Fa Shan and vicinity, Lam Ko Distr., Hainan, July 30, 1927 (Arn.; Calif.; N.Y.).

Formosa: *Abbé Urbain Faurie* 271, Hokuto (Arn.); *K. Odashima* 17825, Sirin, Taihoku-syu, July 10, 1935 (Arn.; Chi.; N.Y.); *Odashima* 17880, same place, May 29, 1934 (Arn.; Chi.; N.Y., 2 sheets); *Richard Oldham* 83, Tamsuy, 1864 (Chi.; Gray; N.Y., 2 sheets).

Philippine Islands: *M. Ramos* 4912, Pangasinan Province, Isl. Luzon, December, 1907 (N.Y.); *J. K. Santos* 31739, Benguet Sub-province, Isl. Luzon, April-June, 1918 (Arn.).

Netherlands East Indies: *Forest Serv.* 16991, May 26, 1932 (Arn.).

New Caledonia: *I. Franc* 637, in thickets near the shore, Nouméa, July, 1909 (Arn.; Chi.; Gray, 2 sheets; N.Y.; U.S.); *Franc* (similarly) 637, December, 1906 (N.Y.); *Franc* 2382, shrub 2 meters tall, Nouméa, 1929 (Arn.); *Franc* 2460, shrub in thickets on slopes, Nouméa (Ouen Toro), 1930 (Arn.; Calif.; Chi.; N.Y.; U.S.).

Fiji Islands: *Otto Degener* 15347, shrub 2.5-3 feet tall, dry grass-land, alt. 50-200 meters, Mataimeravula, vicinity of Rewasa, Ra, Viti Levu, May 28, 1941 (Arn.); *J. Horne* 386, *annis* 1877-1878 (Gray); *B. Seemann* 72, in 1860 (Gray); *Albert C. Smith* 826 *p. p.*, tree 4 meters tall, on exposed cliff-head, native name *wosi*, alt. 150-350 meters, hills west of Mbutha Bay, Natewa Peninsula, Thakaundrove, Vanua Levu, December 21, 1933 (Calif.; N.Y.); *Smith* 1425, shrub 2 meters tall, in open places, alt. 100-200 meters, central volcanic section, near Lomaloma, Vanua Mbalavu, March 28, 1934 (N.Y.); *United States Explor. Exped. under Capt. Wilkes*, 1838-1842 (Gray).

Australia: *J. L. Boorman*, Gunnedah, New South Wales, August, 1907 (Chi.); *Miss O. M. Court*, on sand-hills, Yeppoon, Queensland, July, 1925 (Arn.); *Sabine Helms* 1120, shrub, Magnetic Isl., north Queensland, 1922 (Arn.); *E. J. Smith*, Mount Edwards, September, 1933 (Arn.).

New Zealand: *Banks & Solander* (*Capt. Cook's 1st Voyage*), 1768-1771 (U.S.); *T. F. Cheeseman*, Woodhill, North Isl., October, 1882 (U.S.); *Mr. Dupetit-Thonar*, Baie des Iles (Gray); *T. Kirk*, North Isl. (Gray); *Kirk* 86, Kaipaia, North Isl. (U.S.); *Kirk* (similarly) 86, Omaha, North Isl. (Gray); *D. Petrie* 138, Hawkes Bay, North Isl. (Gray); *Védel*, in 1847 (U.S.).

Dodonaea viscosa var. β *linearis* f. 3. *arizonica* (A. Nels.) Sheriff, Amer. Journ. Bot. 32: 214. 1945. *Dodonaea arizonica* A. Nels. *ibid.* 21: 576. 1934. .

This forma differs from the two previous formae in having definitely pubescent branchlets to the inflorescence. In the first two formae, the branchlets are glabrous to obscurely or sparsely setulose.

Occasionally a very few of the hairs on the branches of the inflorescence are somewhat closer together in pairs, suggesting an approach to *D. eriocarpa* of the Hawaiian Islands, the Galapagos Islands, and the Island of Java, which in many of its varieties has a more or less stellate pubescence.

Specimens examined for f. 3. *arizonica*:

Western Texas: *A. Schott*, Bravo del Norte (Chi.).

Arizona: *Alice Eastwood* 15952, near Fish Creek, on Apache Trail, October 22, 1928 (Chi.); *Sister Mary Noel Fochtman* 217, lower slopes of Baboquivari Mountains, December 2, 1936 (Chi.; N.Y.); *F. Raymond Fosberg* 7498, shrubs 2 meters tall, rocky slopes, foothills of Baboquivari Mountains, Pima County, April 2, 1932 (Chi.); *J. W. Gillespie* 5388, alt. 3,300 feet, canyon near Superior, Pinal County, March 19, 1932 (Calif.; N.Y.); *Gillespie* 8539, alt. 2,800 feet, Apache Gap, on Apache Trail, Pinal County, October 11, 1931 (Calif.; Gray); *M. F. Gilman* 141, Fresnal, Pima County, April 13, 1928 (N.Y.); *Herbert W. Graham*, picnic grounds, Sabino Canyon, alt. 3,000 feet, Santa Catalina Mountains, June 25, 1927 (Calif.; N.Y.); *David Griffiths* 2132, on trip to Castle Rock, November 17, 1900 (N.Y.); *Griffiths* 2530, Sabino Canyon, March 23, 1901 (N.Y.); *J. Arthur Harris* C14143, Pima Canyon, Santa Catalina Mountains, April 3, 1914 (N.Y.); *Harris* C16572, at mouth of Sabino Canyon, Santa Catalina Mountains, August 19, 1916 (N.Y.); *M. E. Jones*, Mescal Mountains, May 24, 1890 (Calif.; Gray); *Jones*, alt. 3,000 feet, Sabino Canyon, Catalina Mountains, August 20, 1903 (N.Y.); *Jones*, Baboquivari Mountains, September 19, 1929 (Gray; N.Y.); *J. G. Lemmon*, Fort Lowell, 1880 (Gray); *Lemmon*, San Antonio Creek near Fort Lowell, 1880 (Chi.); *F. E. Lloyd*, Pima Canyon, vicinity of Tucson, November 11, 1906 (Chi.); *Lloyd*, Vent Canyon, vicinity of Tucson, April 24, year not certain (Chi.; Gray); *Aven Nelson* 10307, hillsides along Apache Trail, Phoenix-Globe Highway, May 3, 1925 (N.Y.); *Nelson* 11276, hillsides between Canyon Lake and Roosevelt Dam, Salt River, March 20, 1930 (type collection, N.Y.); *Aven Nelson & Ruth A. Nelson* 1151, foothills of the Baboquivari Mountains, March 13, 1935 (Calif.; Gray; N.Y.); *W. F. Parish*, Lowell, May 9, 1884 (Chi.); *R. H. Peebles* 11653, "wings of fruit usually 3, occasionally 4," alt. 1,950 feet, Ash Creek, Apache Trail, Maricopa County, May 19, 1935 (Chi.); *C. G. Pringle*, by streams of the Santa Catalina Mountains, flowers June 27, fruit April 18, 1881 (Chi.; Gray); *C. L. Shear* 4246, Santa Catalina Mountains, April 10, 1906 (N.Y.); *Forrest Shreve* 5139, tree 12 feet tall, alt. 3,200 feet, Pima Canyon, Santa Catalina Mountains, April 4, 1917 (Calif.; Gray); *W. T. Swingle*, Allison Dam, Baboquivari Mountains, Pima County, July 10, 1931 (N.Y.); *J. W. Toumey*, Tucson, January-May, 1894 (Calif.; Gray; N.Y.); *Toumey*, Tucson, 1895 (N.Y.); *M. C. Wiegand & G. B. Upton* 4614, Sabino Canyon, Tucson, April 22, 1922 (Chi.).

Sonora, Mexico: *H. S. Gentry* 1389, on oak ridge and pine mesa, 6-7 feet tall, in lower canyon becoming a tree, Sierra Chiribo, Río Mayo, March 7, 1935 (Calif.; Chi.); *Edward Palmer* 290, waterfall, mountains, Guaymas, October, 1887 (Calif.; Gray; N.Y.); *George Thurber*, Rayon to Ures, 1852 (Gray); *Thurber* 909, mountain pass between Magdalena and Cucurpe, October, 1851 (Gray; N.Y.); *Stephen S. White* 2800, slender shrub 1 meter tall, Tarachique, Cañon de la Escalera, June 23, 1940 (Calif.); *Ira L. Wiggins* 5913, granitic hills 2 miles south of Sasabe, October 21, 1932 (Calif.); *Wiggins* 7156, gravelly, red soil, 20 miles southeast of Magdalena, September 12, 1934 (Calif.).

Dodonaea viscosa var. γ *arborescens* (Cunn.) Sherff, Amer. Journ. Bot. 32: 214. 1945 and f. *arborescens* Sherff *loc. cit.* *Dodonaea arborescens* Cunningham *ex* W. J. Hook. Journ. Bot. 1: 251. 1834 (as a syn. for *D. Asplenifolia* var. β W. J. Hook. *loc. cit.*). *Dodonaea Asplenifolia* var. *arborescens* (Cunn.) J. D. Hook. *ex* W. J. Hook. *op. cit.* 2: 415. 1840.

Bentham (Fl. Austral. 1: 476. 1863), as already stated, treated *Dodonaea viscosa* as having three varieties, namely *vulgaris*, *angustifolia* (our *linearis*), and *spatulata*.¹ The third variety, which we may now notice in detail, had been described years before by Smith (*in Rees et al.* Cyclop. 12: *sub Dodonaea*. 1809) as the species *Dodonaea spatulata*. Bentham wrote: "Usually a more bushy and not so tall a shrub as the preceding varieties, often very viscid. Leaves shorter . . . obovate-oblong, oblong-cuneate, spatulate, oblanceolate or broadly linear-cuneate, usually obtuse or sometimes truncate, the lateral veins usually conspicuous. . . . Capsules very variable, but generally intermediate between those of the var. *vulgaris* and *angustifolia*, but nearer to the former. . . . This is the commonest, perhaps the only form in Victoria, Tasmania, and S. Australia . . . and some of the Sandwich Island specimens can be precisely matched in Australia. . . . *D. asplenifolia*, Rudge, in Trans. Linn. Soc. xi. 297, t. 20 . . . is an apparently rare form with linear-cuneate, 3-toothed leaves. . . ."

There seems no question that Bentham's judgment as to *D. Asplenifolia* Rudge (based on a plant from near Port Jackson, at Sydney, New South Wales) was sound. However, Bentham appears to have

¹ As already noted, Smith's original spelling *spatulata* was altered by Bentham to *spathulata*. Since each spelling has good standing in the Latin, I have retained Smith's on grounds of priority.

overlooked Allan Cunningham's name *arborescens*, which had been assigned to varietal status in 1840, and, according to present rules, must be taken up in place of *spatulata*. The type of var. *arborescens* was *Ronald Gunn* 377, Tasmania. It had been given the manuscript name *Dodonaea arborescens* by Cunningham but was reduced by W. J. Hooker to a variety of the Australian *D. Asplenifolia* and described as follows: "Var. β foliorum apicibus magis dentato-sinuatis, ramis angustioribus." I have seen several specimens from eastern Australia and from Tasmania that answer to this leaf-description. Many or most of their leaves are more or less sinuate-dentate *at the apex and somewhat down the margins*. A specimen even from Florida (Small & Wilson 2035) and apparently one from Ecuador (Hitchcock 21411) are identical. None of the specimens examined appear in any way teratological or monstrous. They may, therefore, be taken as representing a true taxonomic entity, in this case a variety. This variety in its strictest sense, exemplified by its type, Gunn 377 from Tasmania, may be designated further as f. 1. *arborescens*, *foliorum apicibus marginibusque plus minusve sinuato-dentatis*.¹

Specimens examined, f. 1. *arborescens* only:

Florida: *J. K. Small & P. Wilson* 2035, in woods near the beach, St. Augustine, May 22, 1904 (N.Y.; remarkable as being American, but in aspect close to Tasmanian plants of this form).

Ecuador: *Albert S. Hitchcock* 21411, shrub, on dry hill, alt. 1,800–2,600 meters, between La Toma and Loja, Prov. Loja, September 4, 1923 (Gray; N.Y.; scarcely typical but, particularly at Gray, closer to this forma than to f. *spatulata*).

France: *Ch. Naudin*, Villa Thuret (where evidently cultivated), March 24, 1887 (Arn.).

Australia: *Caly*, Parramatta, New South Wales, 1803 (Arn.); *S. L. Everist* 741, small tree with slender branches, Noondoo, Maranoa District, Queensland, December 14, 1934 (Arn.); *Everist* 1825, slender shrub up to 8 feet tall in gray clay soil, Lisgool, Mitchell District, Queensland, June 20, 1939 (Arn.); *W. D. Francis*, Wallumbilla, Western Railway Line, Queensland, September 15 and 16, 1925 (Arn.); *C. E. Hubbard* 5101, in sandy soil, open eucalyptus forest, alt. *circ.* 900 feet, near Wandoan, Queensland, November 17 and

¹ Through its f. *arborescens*, *D. viscosa* approaches the usually narrower-leaved *D. attenuata* Cunn. of Australia. In the latter species, one or two lateral lobes or leaflets often occur irregularly along the leaf-blade, suggestive of the pinnately compound-leaved species of *Dodonaea*.

18, 1930 (Arn.); *Hubbard* 5697, among granite boulders and in crevices of rocks in open forest, alt. 3,300 feet, Stanthorpe, Great Dividing Range, Queensland, 1931 (Arn.); *C. T. White*, Crow's Nest, North Darling Downs, Queensland (Arn.); *White*, Inglewood, south-eastern Queensland, November, 1922 (Arn.); *White* 9503, shrub 2 meters tall, Roma, Queensland, October 25, 1933 (Arn.); *H. B. Williamson*, Mount Fero, Victoria, October, 1927 (Chi.).

Tasmania: *William Archer* (U.S.; topotype and clearly a typical specimen); *J. H. Maiden*, Risdon Cove ("Robert Brown collected here in 1803"), February, 1906 (Calif.); *C. T. White* 8326, upright shrub or small tree, 2-3 meters tall, common on dry, stony hillsides, Bellarive, near Hobart, 1932 (Arn.).¹

Bentham's description of his third variety, *spatulata*, evidently covers a considerable number of slightly varying races or strains with leaves more or less spatulate, but not or only negligibly dentate or sinuate. Most of these are best represented by the type (Kew) of *Dodonaea spatulata* Smith from the Hawaiian Islands and may be called more precisely *D. viscosa* var. *arborescens* f. 2. *spatulata* (Smith) Sherff (Amer. Journ. Bot. 32: 214. 1945).² (For certain broader-leaved material, see f. *Ehrenbergii* below.)

Specimens examined for f. 2. *spatulata*:

Florida: *Mr. Blodgett*, low shrub, Charlotte Harbor (N.Y.); *A. H. Curtiss* 485 p. p., on sand ridges between the ocean and Indian River, September (Chi.; N.Y.); *A. P. Garber*, St. Augustine, July, 1876 (N.Y.); *F. W. Hunnewell* 8755, in sandy woods near beach, St. John County, March 1, 1923 (Gray); *J. K. Small* 2314, in woods near beach, St. Augustine, December 2, 1904 (N.Y.); *Small & J. B. De Winkeler* 9037, on sandhills, Avon Park to Sebring, May 1, 1919 (N.Y.); *S. M. Tracy* 7481 p. p., Sanibel Isl., May 15, 1901 (Calif.; Chi.).

Mexico: *C. Conzatti* 1498, alt. 2,200 meters, Alturas de Matatlán, State of Oaxaca, June 19-23, 1906 (N.Y.); *Edward Palmer* 495, alt. about 320 meters, vicinity of Victoria, State of Tamaulipas, May 1-June 13, 1907 (Calif.; Gray); *C. A. Purpus* 121, alt. 6,000-7,000 feet, San Pablo, Baja California, January-March, 1898 (N.Y.);

¹ The Francis and Hubbard and White specimens belong with f. *arborescens* but display an approach toward f. *spatulata*.

² *Dodonaea viscosa* f. *arborea* Hert. Rev. S. Amer. Bot. 8: 168. 1936. *Nomen. D. arborea* Hert. op. cit. 5: 85. 1937.—Herter's type basis was his no. 96921, from Cerro Animas, Dept. Maldonado, Uruguay, an excellent isotype of which I have before me (Chi.). It can be matched by various specimens of f. *spatulata* from Australia, Hawaiian Islands, and elsewhere.

F. Lyle Wynd & C. H. Mueller 89, along dry creek bed, between Hipolito and Sacramento, State of Coahuila, June 15, 1936 (N.Y.).

Colombia: *F. W. Pennell* 2352, shrub, on grassy hill 4 miles southwest of Bogota, alt. 2,700–2,800 meters, October 4–8, 1917 (Chi.; Gray; N.Y.).

Peru: *C. Vargas* 9781, shrub, 1–8 meters tall, alt. 2,300–2,800 meters, on clayey or rocky slopes, common in xerophytic canyons of the Apurimac system, Hacienda Jucre, Prov. Grau, Dept. Apurimac, native name *chaman* or *chamana*, January 18, 1939 (Calif.; Chi.); *Llewelyn Williams* 7564, shrub, alt. 2,700 meters, on sierras, Chachapoyas, Dept. Amazonas, January, 1930 (Chi.).

Bolivia: *José Steinbach* 6017, shrub, 103 meters tall, native name *chaka-tia*, alt. 2,000–3,600 meters, Dept. Cochabamba (Chi.).

Uruguay: *W. G. Herter* (herb. no.) 96921, growing 5 meters tall, alt. 50 meters, in dryish, open, stony places, Cerro Animas, Dept. Maldonado, April 10, 1936 (Chi.; *sub nom. D. viscosa f. arborea* Hert.); (*ex herb.*) *C. Diego Legrand* 792, Cerro Animas, Maldonado, native name *chilca de sierra*, June 16, 1936 (Chi.).

Island of Socotra: *Commun. Bayley Balfour* 659, February–March, 1880 (Gray).

Kenya Colony: *Edgar A. Mearns* 387 *p. p.*, alt. *circ.* 2,000 meters, between Oljoro-o-Nyon and Narok rivers, June 7 and 8, 1909 (Chi.; Gray).

British East India: *Eileen W. Erlanson* 5178, undershrub, dry hillside, Trivandrum, Travancore, January 8, 1934 (N.Y.); *Schlagintweit*, alt. 1,400–2,500 feet, Musakél, Prov. Punjab, February 17–March 5, 1857 (Gray); *R. R. Stewart* 16570B, alt. 2,000 feet, Nurpur, Rawalpindi District, Punjab, February–April, 1938 (Arn.).

Indo-China: *J. & M. S. Clemens* 3210 *p. p.*, common dune shrub, Tourane (Turan) and vicinity, Annam (Anam), May 23–26, 1927 (Calif.; N.Y.); *C. B. Robinson* 1056, Nha-trang and vicinity, Annam, March 11–26, 1911 (N.Y.).

Philippine Islands: *R. C. McGregor* 43622, Burgos, Prov. Ilocos Norte, Isl. Luzon, November, 1923 (Arn.; Calif.); *Ramos* 27157, Burgos, February and March, 1917 (Arn.).

Fiji Islands: *Albert C. Smith* 86, slender tree 4 meters tall, native name *usi*, among reeds, alt. 200–400 meters, on hills, above Namalata and Ngaloa bays, Kandavu, October 13–18, 1933 (Calif.; N.Y.; U.S.).

New Caledonia: *Vieillard* 246, Wagap, Gatopa, 1861–1867 (N.Y.).

Cook Islands: *Harold E. Parks & Susan Thew Parks* 22332, Isl. Rarotonga, May–July, 1929 (Calif.; Chi.; Gray; N.Y.); *Gerrit Wilder*, same island, 1929 (N.Y.).

Hawaiian Islands in general or from Oahu (for Lanai, etc. see below): *Mr. W. Hancock* (Kew no.) 51, in 1898 (Kew); *A. Menzies*, topmost shrubs on the Sandwich Islands, alt. 6,000 feet (Kew, type material); *W. A. Bryan*, Diamond Head, Oahu, December 6, 1903 (Bish.); *Degener, Topping, Martinez, & Salucop* 11195, below forest, on ridge directly north of Kaala summit, Oahu, March 26, 1937 (Arn.; Berl.; Calif.; Chi.; Corn.; Del.; Gray; Par.); *F. R. Fosberg* 13184, shrub 1.5 meters tall, alt. 20 meters, on dry, rocky bluff, Keaau, July 24, 1936 (Chi., etc.); *Fosberg* 13185, shrub 2 meters tall, same place and date (Chi., etc.); *F. R. Fosberg & Katherine Duker* 9049, small tree 2.5 meters tall, alt. 480 meters, in dry forest, head of Makua Valley, Makua, November 25, 1932 (Chi.); *Mann & Brigham* 582 (Bish.); *J. M. Oliveira & V. O. Fosberg* 97, on dry, bushy slope, east slope of head of Kalama Valley, Maunalua, Oahu, March 7, 1937 (Chi., etc.); *O. Selling*, cult., Kamehameha School garden, Honolulu, Oahu, June 30, 1938 (Goth.).

Hawaiian Islands: Lanai: *George C. Munro* 68, native name *aalii*, Kaluanui, flowering April 16, 1914 and seeding September 26, 1913 (Bish.); *Munro* 121, Kaluanui, bend beyond Waipaa (i.e., Waiapaa), September 26, 1913 (Bish.); *Emilio Ordoñez* (*Degener distrib. no.*) 12846, Puu Alii, July 14, 1940 (Arn.; Berl.; Calif.; Chi.; Corn.; Gray; Minn.; Mo.; Phila.).

Hawaiian Islands: Maui: *Cranwell, Selling, & Skottsberg* 2802, in brushwood on crater floor, Haleakala, August 4, 1938 (Goth.); *C. N. Forbes* 2009-M, on south slope of Haleakala, March 18, 1920. (Bish.; Chi., etc.).

Hawaiian Islands: Hawaii: *Cranwell, Selling, & Skottsberg* 3259, vicinity of Kilauea, September 12, 1938 (Goth.); *Otto Degener* 11150, in arid regions, in volcanic ash near crater, Kilauea, December 10, 1922 (Arn.; Chi.; N.Y.); *Degener* 11151, in hot, sunny situation near ocean, near Hawaiian rock-figures, Kamoamoa, August 23, 1922 (Arn.; Berl.; Chi.); *Degener* 11152, in lava desert, Kilauea, December 18, 1922 (Chi.); *Degener* 11158, in rocky pasture, Puna-
i-
luu, July 25, 1926 (Chi.); *Degener* 11170, in dry region, Kipuka Puaulu, Kilauea, July 8, 1929 (Arn.; Berl.; Chi.; Del.; N.Y.); *Degener* 11172, near Volcano House, Kilauea, July 20, 1929 (Chi.); *Alice Eastwood*, bird forest near volcano, August 1–16, 1924 (N.Y.); *Abbé Urbain Faurie* 278, alt. 2,000 meters, Mauna Kea, July, 1909

(Arn.; Del.; Par.); *C. N. Forbes*, Kilauea (Bish.); *Forbes* 305-*H*, on slopes of Mauna Loa, near Puu o Uo, Kona, July 9, 1911 (Bish.; Calif.; Mo.); *Forbes* 308-*H*, on slopes of Mauna Loa, below Puu o Uo, July 14, 1911 (Bish.); *Forbes* 966-*H*, June 27, 1915 (Bish., etc.); *Forbes* 976-*H*, *kipukas* in Lava Flow of 1823, at level of Keawewai, June 28, 1915 (Bish.); *Forbes* 1032-*H*, above Puu a Ulu, July 1, 1915 (Bish.); *Forbes with Brigham & C. L. Thompson*, Volcano Kilauea, September, 1908 (Bish.; Calif.; Mo.; N.Y.); *F. R. Fosberg* 10146, bush 1 meter tall, alt. 950 meters, on *pahoehoe* lava, Mauna Iki, Kau Desert, August 31, 1933 (Chi., etc.); *Fosberg* 10148, bush 1.5 meters tall, alt. 900 meters, on old lava, Volcano Road above Mauna Iki, August 31, 1933 (Chi., etc.); *V. O. Fosberg* 51, bush 2-3 meters tall, dry lava flow, between 1887 and 1868 flows, August 10, 1936 (Chi.); *Galathea Expedition* 3390, years 1845-1847 (Bish.); *Constance Hartt & M. Neal* 877, alt. 6,500 feet, Humuula, August 19, 1935 (Bish.); *Hartt & Neal* 878, alt. 6,500 feet, same place and date (Bish.); *William Hillebrand*, Isl. Hawaii (Kew); *Hillebrand*, alt. 4,000 feet, July, 1865 (Chi.); *A. S. Hitchcock* 14638, alt. 5,000 feet, Mauna Loa, September 13, 1916 (U.S.); *Mrs. G. Earle Kelly* 261, Kilauea, July, 1916 (Arn.); *Mann & Brigham*, Kilauea (Bish.); *Mann & Brigham* 308, central plateau of Hawaii (Gray; Mo.); *Mann & Brigham* 410, Kilauea (Chi.; N.Y.); *Marie C. Neal*, Kilauea Summer Camp, Kilauea, July 28, 1927 (Bish.); *Neal*, same place, August 16, 1929 (Bish.; Chi.); *Neal, Hartt, & John Martin*, alt. 8,250 feet, summit of Mount Hualalai, June 19, 1934 (Bish.; N.Y.); *Jules Remy* 568, years 1851-1855 (Par.); *Joseph F. Rock* 3764, summit of Mount Hualalai, June 9, 1909 (Gray); *Rock* 3766, same place and date (Gray); *Rock* 3767, same place and date (Gray); *Rock* 3852, alt. 8,200 feet, same place and date (Bish.; Gray; Par.; U.S.); *W. A. & C. B. Setchell*, June 23, 1924 (Calif.); *Carl Skottsberg* 491, alt. 1,200 meters, crater of Kilauea, December 9, 1922 (Bish.; Goth.); *Skottsberg* 497, same place, September 12, 1922 (Goth.); *Skottsberg* 522, below Rest-house, slope of Mauna Loa, September 15, 1922 (Bish.; Goth.); *Skottsberg* 1121, between Kilauea and Kapapala, September 18, 1922 (Bish.; Goth.); *United States Explor. Exped.*, Isl. Hawaii (Gray; U.S.); *U. S. Explor. Exped.*, at 8,000 feet station, Mauna Loa, 1838-1842 (N.Y., 2 sheets); *R. L. Usinger* 2, *aa* lava flat, Humuula, August 3, 1935 (Bish.).

Australia: *E. H. Wilson* 488, cult., Zoological Gardens, Perth, Western Australia, November, 1920 (Arn.); *C. T. White* 5502, shrub 8 feet tall, abundant on hillsides, Morialta near Adelaide,

South Australia, November 19, 1927 (Arn.); *J. L. Boorman*, Hargreaves, New South Wales, January, 1913 (Chi.).

Tasmania: *Caly*, December, 1805 (Arn.).

New Zealand: *T. Kirk*, South Isl. (Chi.).

Dodonaea viscosa var. γ *arborescens* f. 3. *Ehrenbergii* (Schlecht.) Sherff, Amer. Journ. Bot. 32: 214. 1945. *Dodonaea Ehrenbergii* Schlecht. Linnaea 17: 639 (sphalm 739). 1843; *ibid.* 18: 36 (sphalm 52). 1844. *Dodonaea viscosa* var. *obovata* Hitchc. Report. Missouri Bot. Gard. 4: 73. 1893. *Dodonaea microcarya* Small, Torreya 25: 38. 1925.

Because of the extreme polymorphism present in *D. viscosa*, some of its almost innumerable forms frequently look mutually more unlike than many entities that commonly pass as distinct species. Mainly for this reason most of them have been segregated under special names. The name *Dodonaea Ehrenbergii* was applied by Schlechtendal to a tree or shrub, specimens of which had been collected by C. Ehrenberg on the plains of Santo Domingo. A good specimen of Ehrenberg's original material is in the Herbarium of the New York Botanical Garden. It is matched in varying degrees by an extensive assortment of plants from the West Indies and by some from Florida.

Radlkofer, at various times during his long-continued studies on *Dodonaea*, examined various collections from the West Indies. In his extensive treatment of *D. viscosa* (*in Martius, Fl. Brasil.* 13th: 644. 1900), he reduced *D. Ehrenbergii* to *D. viscosa* var. *spatulata* (which, as shown above, is reducible to a forma of var. *arborescens*). Numerous herbarium specimens more or less typical for *D. Ehrenbergii* were labeled by him *D. viscosa* var. *spatulata*. Thus, for example, as late as June, 1913, he determined a specimen, one quite typical for *D. Ehrenbergii*, as *D. viscosa* var. *spatulata*. This had been collected by *Britton, Britton, & Cowell*, no. 12475, on coastal cliff, Punta Piedra, Nipe Bay, Prov. of Oriente, Cuba, March 7, 1912 (in Herb. N.Y.).

In 1893, Hitchcock (*loc. cit.*) had described somewhat broad-leaved specimens from Cat Island and Inagua (both in the Bahama Islands), giving them the new name *D. viscosa* var. *obovata*. It may well be doubted, however, that Hitchcock would have erected a new variety for his plants could he have had access to Radlkofer's exhaustive and critical survey, as then unpublished, of *Dodonaea viscosa* and various of its forms. In recent years, a wealth of speci-

mens from the general region of the West Indies has been brought into herbaria, doubtless totaling many more than Radlkofer could have had for examination. Generally speaking, these may be said to vary from the usual material of *f. spatulata* to somewhat the same extent as the formae *Burmanniana* and *Schiedeana* do from the typical forma (*i.e.*, *f. repanda*) of var. *vulgaris*. Some of the specimens have extremely small fruits (± 5 mm. wide over-all when flattened out). Among these are the ones described by Small (*loc. cit.*) as *Dodonaea microcarya*. A great variation occurs, however, in size of fruits, many specimens having medium-sized to larger ones (7–15 or more mm. wide over-all, when flattened out). The leaves are usually shorter and proportionately wider than in var. *arborescens* proper (*i.e.*, its *f. arborescens*) and its *f. spatulata*, more inclined to be broadly rounded or truncate to emarginate at apex, and usually more of a grayish-green (judging from dry material).

It must be noted in all fairness to Radlkofer, that while he had made a substantially cosmopolitan survey of *Dodonaea viscosa* in literature and plant materials, he was concerned, in the work above cited, almost exclusively with the Brazilian flora. Had he included the West Indies and Florida as within the scope of his treatment, he undoubtedly would have enlarged upon his mere notation of *D. viscosa* var. *spatulata*, already cited above (see p. 271) and equivalent essentially to var. *arborescens* of this paper, and listed for it several formae. At all events, the *Dodonaea Ehrenbergii* of Schlechtendal, to extend Radlkofer's treatment today at all consistently, would seem best to rank as a forma under var. *arborescens*.¹

Specimens examined for *f. 3. Ehrenbergii*:

Florida: *Blodgett*, southern Florida (N.Y.); *John K. Small* 4085, pine lands between Miami and Cocoanut Grove, November 3—

¹ It cannot be emphasized too strongly that in certain localities the *f. Ehrenbergii* may easily appear widely and specifically different from *f. arborescens*. Future authors of floristic works restricted to such localities will perhaps, therefore, be tempted so to treat it. Then, too, there will doubtless always be some botanists who strive for uniformity in assignment of classificatory status to plant entities regardless of the stability or constancy of these entities, or, more particularly, regardless of their tendency in many parts of their geographic range to form countless intergradations. To these I would merely repeat Asa Gray's observation, "Vain is the attempt to draw absolute limits where Nature luxuriates in gradations." (Proc. Amer. Acad. 5: 126. 1861.)

Finally, we should keep in mind the fact that some few botanists, such as the late N. L. Britton and the late C. F. Millspaugh in the latter part of their lives, abandoned varieties as such, reducing them outright to synonymy with their respective species proper, or reducing them to anonymous "races," or setting them off as individual species. Obviously, in following the nomenclatural pathway marked out for the study of *Dodonaea viscosa* by Radlkofer, I have made no attempt to conform to the irreconcilable views of such workers.

December 7, 1912 (N.Y.); *Small* 9883, hammock, northern end of Big Pine Key, May 9, 1921 (N.Y., *sub nom.* *Dodonaea microcarya* Sm.); *Small*, *Alfred Cuthbert, & Paul Matthaus* 9105, hammock, northern part of Big Pine Key, May 8, 1919 (N.Y., 2 sheets, type coll. of *D. microcarya* Small).

Bahama Islands: *L. J. K. Brace* 1847, Cherokee Sound, Abaco, December 25, 1904 (Chi.; N.Y.; U.S.); *Brace* 3942, Port Nelson, Rum Cay, December 4, 1905 (Chi.; N.Y.; U.S.); *Brace* 4159, Cove Road to South Side, Long Cay, December 7-17, 1905 (Chi.; Gray; N.Y.; U.S.); *Brace* 4255, Spring Point, Acklin's Isl., December 21, 1905 to January 6, 1906 (Chi.; N.Y.); *Brace* 4679, Landrail Point, Crooked Isl., January 9-23, 1906 (Chi.; N.Y.; U.S.); *Brace* 5327, Rose Cay, Northern Bight, Andros, August 18 to September 10, 1906 (Chi.; N.Y.); *N. L. Britton & C. F. Millspaugh* 5422, edge of coppice, Glass Window to Gregory Town, Eleuthera, February 18, 1907 (Chi.; N.Y.); *Britton & Millspaugh* 5685, coastal whitelands, Little San Salvador, February 25 and 26, 1907 (Chi.; N.Y.); *Britton & Millspaugh* 5989, scrub in white land, edge of a salina, Conception Isl., March 9 and 10, 1907 (Chi.; N.Y.); *W. C. Coker* 444, Port Nelson, Rum Cay, July 10, 1903 (N.Y.); *Coker* 567, shrub, Abaco, July 20, 1903 (N.Y.); *Albert S. Hitchcock*, Crooked Isl., November, 1890 (Chi., plus a fragment *ex typo in herb.* Mo.); *Hitchcock*, Isl. Inagua, December 3, 1890 (Chi., fragm. *ex herb.* Mo.); *C. F. Millspaugh & C. M. Millspaugh* 9043, in a sisal field, Waterloo and vicinity, Grand Turk Isl., February 20-March 24, 1911 (Chi.; N.Y.); *Millspaugh & Millspaugh* 9311, on rocky plain, Ambergris Cay, the Caicos Group, March 12, 1911 (Chi.; N.Y.); *George V. Nash & Norman Taylor* 955, Salt Pond Hill, Inagua, October 12, 1904 (Chi.; N.Y.); *Nash & Taylor* 1032, Tenados, Inagua, October 14, 1904 (Chi.; N.Y.); *Nash & Taylor* 1035, same place and date (Chi.; N.Y.); *Nash & Taylor* 1107, Blakeville, Inagua, October 18, 1904 (Chi.; N.Y.); *Nash & Taylor* 1421, shrub 4-5 feet tall, white-land, near Lantern Head Creek, Inagua, November 3, 1904 (N.Y.); *Nash & Taylor* 3808, shrub, Grand Turk Isl., August 27-September 1, 1905 (N.Y.); *J. T. Rothrock* 279, Crooked Isl., November 24, 1890 (Chi.; N.Y.); *Rothrock* 282, growing 8 feet tall, Crooked Isl., winter of 1890-1891 (Chi.); *Percy Wilson* 7405, Atwood Cay, December 3 and 4, 1907 (Chi.; N.Y.); *Wilson* 7500, Abraham Bay and vicinity, Mari-guana, December 6-8, 1907 (Chi.; N.Y.); *Wilson* 7602, South Caicos, Caicos Islands, December 14-16, 1907 (Chi.; N.Y.); *Wilson* 7700, tree 18 feet tall, Kew and vicinity, North Caicos, December 18,

1907 (Chi.; N.Y.); *Wilson* 7875, Hog Cay, Great Ragged Isl., December 26, 1907 (Chi.; N.Y.).

Cuba: *Britton, Britton, & Cowell* 12475, shrub 2 meters tall, on coastal cliff, Punta Piedra, Nipe Bay, Prov. Oriente, March 7, 1912 (N.Y.; U.S.); *J. A. Shafer* 2745, shrub or tree, Cayo Paredon Grande, Camaguey, October 25, 1909 (Chi.; Gray; N.Y.; U.S., 2 sheets); *Shafer* 2775, eastern part of Cayo Cruz, Camaguey, October 27, 1909 (Chi.; Gray; N.Y.; U.S.).

Haiti, etc.: *Harold E. Box* 1265, sandy or rocky seashores and dry, exposed, limestone hills, Corbizon Point, Antigua, Brit. W. Indies, November 13, 1937 (U.S.); *N. L. Britton & W. C. Fishlock* 968, sandy plain, west end, Anagada, Brit. Virg. Isls., February 19 and 20, 1913 (Chi.; N.Y.; U.S.); *Père Duss* 2904, growing 2-4 meters tall, Guadeloupe Isl., 1893 (N.Y.); *C. Ehrenberg*, Isl. Santo Domingo (N.Y.; author's original material); *E. L. Ekman* H.4942, alt. about 600 meters, Haiti, September 29, 1925 (U.S.); *W. C. Fishlock* 47, thickets near the shore, Anagada, October, 1918 (Gray; U.S.); *E. C. Leonard* 4203, vicinity of Fond Parisien, Etang Sau-matré, Haiti, May 5-13, 1920 (Chi.; N.Y.; U.S.); *Leonard* 8879, alt. 325-900 meters, vicinity of Ennery, Dept. l'Artibonite, Haiti, January 14, 1926 (Gray; N.Y.; U.S.); *E. C. & Genevieve M. Leonard* 13945, tree 20 feet tall, beach east of harbor, vicinity of Basse Terre, Torue Isl., Haiti, March 22, 1929 (U.S.); *Leonard & Leonard* 13946, tree 20 feet tall, same place and date (Gray; N.Y.; U.S.); *H. Stehlé* 207, alt. 125 meters, plateau, Desirade Isl., W. Indies, November 9, 1935 (N.Y.); *F. L. Stevens* 6152 and 6289, Mona Isl., December 20 and 21, 1913 (N.Y.).

Dodonaea viscosa var. γ *arborescens* f. 4. *hispidula* f. nov.—
Ramuli foliaque etiam fructus (praecipue alarum margines) plus minusve patentii-hispiduli. Folia sublate spatulata, apice orbiculato vel subtruncato abrupte mucronulata, plerumque 2.5-4.5 cm. longa et 1-1.5 cm. lata.

Branchlets and leaves and even the fruits (especially the edges of the wings) more or less spreading-hispidulous. Leaves subwidely spatulate, abruptly mucronulate at the orbiculate or subtruncate apex, commonly 2.5-4.5 cm. long and 1-1.5 cm. wide.

Specimens examined: *T. S. Brandegee* 110, Sierra de la Laguna, southernmost Baja California, January 26, 1890 (type, Calif.); *C. A. Purpus* 219, San José del Cabo, southernmost Baja California (Calif.).

Here, as in var. *linearis* f. *arizonica* and var. *vulgaris* f. *eriocarpa*, *D. viscosa* shows an approach to *D. eriocarpa*, a species which in its pubescent varieties displays, however, a certain amount of stellate pubescence in the ultimate parts of the inflorescence. The type locality of f. *hispidula* is famous for endemic forms.

Dodonaea viscosa var. δ *Stokesiana* F. Brown, Bishop Mus. Bull. 130: 164. 1935.

The var. *Stokesiana* was described by Dr. Forest Brown from a number of specimens collected in the Austral Islands and on the Island of Rapa, representing an areal extent limited roughly by about 20° and 30° S. Lat. and by about 145° and 155° W. Long. Recently I have examined a specimen of one of the collections cited by Brown (Mrs. A. M. Stokes 191, in herb. N.Y.) and have been able to match it closely with several additional specimens not cited by Brown. These are cited below. It will be observed that they extend the known geographic range for var. *Stokesiana* to about 169° E. Long. (Errromango Isl.) and to somewhat less than 17° S. Lat. (Raiatea Isl.).

It is difficult to separate this variety from *D. viscosa* and all its other varieties and forms by any one character, nor indeed did Brown offer a key by which to differentiate var. *Stokesiana*. In a general way, however, the variety tends to differ in its narrower sepals, its sessile or subsessile leaves, its mostly longer and more slender styles, and its smaller and commonly somewhat hispidulous fruits. Brown's description has seemed too scanty. I have therefore drawn up an amplified description from the specimens at hand:

Dodonaea viscosa var. *Stokesiana* F. Brown descript. amplific.—
Folia cuneata oblanceolata, inferne sensim ad basim sessilem vel subsessilem angustata, apice plus minusve rotundata et abrupte apiculata, plerumque 7–9 (rarius \pm 15) cm. longa et 1.5–3 (rarius \pm 4) cm. lata. Flores minores, 4 vel 5 sepalis linearibus (interdum anguste) vel lanceolatis sparsim hispidulis vix nervatis tantum 1–1.5 mm. longis. Antherae 1.5–2 mm. longae. Stylus debilis, plerumque 5–8 mm. longus, 2- vel 3-partitus, demum saepius persistens. Capsula 2- vel 3-partita -alataque, circ. 6–8 mm. lata, alis angustis (\pm 1 mm. latis) exclusis, extus minutissime irregulariterque hispidula.

Leaves cuneately oblanceolate, gradually narrowed below to a sessile or subsessile base, at tip more or less rounded and abruptly apiculate, commonly 7–9 (more rarely \pm 15) cm. long and 1.5–3 (more rarely \pm 4) cm. wide. Flowers smaller; sepals 4 or 5, linear

(at times narrowly so) or lanceolate, sparsely hispidulous, scarcely nerved, only 1–1.5 mm. long. Anthers 1.5–2 mm. long. Style delicate, commonly 5–8 mm. long, 2- or 3-parted, in age more often persistent. Capsule 2- or 3-parted and -winged, about 6–8 mm. wide, the narrow wings (± 1 mm. wide) excluded, at surface irregularly and very minutely hispidulous.

Specimens examined: *Degener & Ordoñez* 14205, native name *katasai*, shrub 1–2 meters tall, on bare forehill, alt. 0–450 meters, Maravu, near Salt Lake, Thakaundrove, Vanua Levu, Fiji Isls., January 17–23, 1941 (Arn.); *S. F. Kajewski* 296, native name *Ney-in-temer*, common in poor, red soil, bracken country, tree about 6 meters tall, alt. 300 meters, Dillon (Dillion) Bay, Eromanga (Erro-mango) Isl., New Hebrides, May 24, 1928 (Arn.; N.Y.; U.S.); a form with elongate, thinner, petiolate leaves approaching those of var. *linearis* f. *angustifolia*; *Archibald Menzies*, Isl. Tahiti (Kew); *T. Powell* 101, Isl. Raiatea, June 29, 1874 (Chi.); *W. A. Setchell & H. E. Parks* 547, shrub up to 10 feet tall, dioecious, fruit light Venetian red, common on dry hillside, Mount Tahara, Isl. Tahiti, July 11, 1922 (Calif., 2 sheets; Gray; U.S.); *United States South Pacific Exploring Expedition under Captain Wilkes*, Isl. Tahiti, 1838–1842 (N.Y., 2 sheets; U.S.);¹ *U. S. S. Pacif. Explor. Exped.*, Fiji Isls., 1838–1842 (N.Y.).

CONSPECTUS OF VARIETIES AND FORMAE OF *Dodonaea viscosa* TREATED
IN THIS ARTICLE²

Var. *a. vulgaris* Benth., p. 270.

- f. 1. *repanda* (Schum. & Thonn.) Radlk. p. 271. Leaves when typical very large (up to ± 18 cm. long and to ± 4 cm. wide), mostly oblong to sub-ovate, more often obtuse at apex. Commonly (like the next two formae) glabrous or glabrate.—Florida, Mexico, Central America southward to Bolivia and Brazil, West Indies, tropical East Africa, China, Malay Archipelago, Australia, Polynesia, etc.
- f. 2. *Schiedeana* (Schlecht.) Radlk. p. 271. Leaves very long (up to ± 16 cm. long and to only ± 2 cm. wide), elongately lanceolate, gradually narrowed to both ends. Comparatively infrequent.—Mexico, Guatemala, British Honduras, Peru, Bolivia, Brazil, West Indies (Isle of Pines), British East India, and Isls. Timor and Papua.

¹ This Tahiti material is that referred to by Asa Gray (Bot. U. S. Explor. Exped. 260. 1854) as being a form of *D. viscosa* with "some of the capsules surrounded by a long exserted style, of 3 or 4 lines in length! . . . while other fruits of the same panicle have the usual short style, not exserted beyond the sinus of the wing."

² Besides the four varieties presented here, two more are known, both of southeastern Polynesia and of highly localized distribution: Var. *a. minor* Sheriff (Amer. Journ. Bot. 32: 212. 1945), known only from the Island of Rapa, and var. *f. marquesensis* F. Brown (Bish. Mus. Bull. 130: 163. 1985) from the Marquesas Islands.

f. 3. *Burmanniana* (Schum. & Thonn.) Radlk. p. 271. Leaves of medium size (7–11 cm. long and 1.5–2 cm. wide), from oblong to narrowly lanceolate or cuneate or oblanceolate, terminally acute or somewhat obtuse.—Widespread in Mexico, Central America, throughout most of South America, Abyssinia to South Rhodesia, southeastern Asia, Malay Archipelago, Australia, Fiji Isls., etc. Apparently absent (as are the other formae of *D. viscosa* except *f. spatulata*) from Hawaiian Isls. (where it is often simulated by *D. eriocarpa* var. *Degeneri f. decipiens* Sherff).

f. 4. *eriocarpaoides* Sherff, p. 284. Leaves often resembling in shape and size those of *f. Burmanniana*, *f. angustifolia*, or even *f. spatulata*. Inflorescences and ultimate branchlets hispidulous.—Known only from Mexico.

Var. β . *linearis* (Harv. & Sond.) Sherff.

f. 1. *linearis* Sherff, p. 285. Leaves linear, now short (± 5 cm.) now long (± 7 –11 cm.); branches of inflorescences (as also in *f. 2. angustifolia*) glabrous to sparsely setulose.—Mexico, Ecuador, Cuba, Haiti, South Africa, Réunion Isl., Formosa, and Australia.

f. 2. *angustifolia* (Benth.) Sherff, p. 287. Leaves linear-lanceolate to linear-oblanceolate, mostly of moderate size.—Florida, Mexico, British Honduras, many parts of South America, southern Asia, Australia, New Zealand, Philippine Isls., etc.

f. 3. *arizonica* (A. Nels.) Sherff, p. 295. Leaves linear; branches of inflorescences hispidulous.—Arizona and Mexico (State of Sonora; apparently replaced elsewhere in Mexico by var. *vulgaris f. eriocarpaoides*).

Var. γ . *arborescens* (Cunn.) Sherff.

f. 1. *arborescens* Sherff, p. 297. Tips and lateral margins of leaves more or less sinuate-dentate. This and the next two forms mostly glabrous or glabrate on foliage and fruits.—Rare in Florida and Ecuador; apparently frequent in Australia and Tasmania.

f. 2. *spatulata* (Smith) Sherff, p. 299. Leaves mostly spatulate, entire or but slightly sinuate-dentate, and of small size (more often 3–6 cm. long and 0.7–1.5 cm. wide).—Of widespread distribution: Florida, Mexico, Colombia to Uruguay, tropical East Africa, southeastern Asia, Polynesia (abundant in Hawaiian Isls.), Australia, Tasmania, and New Zealand.

f. 3. *Ehrenbergii* (Schlecht.) Sherff, p. 308. Leaves usually shorter and proportionately wider, more inclined to be broadly rounded or truncate to emarginate at apex, and usually (at least when dry) more of a grayish-green color. Fruits often very small.—Florida and West Indies.

f. 4. *hispidula* Sherff, p. 306. Branches, leaves, and fruits more or less spreading-hispidulous. Leaves small, subwidely spatulate.—Southernmost Baja California.

Var. δ . *Stokesiana* F. Brown, p. 307.—Austral Isls., Erromango Isl. (New Hebrides), Fiji Isls., and Isls. Raiatea and Tahiti (Society Islands).

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¹ As might be expected in a large assortment of *exsiccatae* representing minor, subspecific categories, a few collections will be found to have been referred in one or several herbaria to one entity, in other herbaria to a slightly different one. In a few cases collectors have merged two collections, apparently of really different entities, under one number. In certain other cases the specimens may have come from different parts of the same shrub or tree, thus deceptively identifying one or several of them with the wrong entity. It may be noted, for instance, that poorly selected or somewhat fragmented specimens of *Dodonaea viscosa* var. *vulgaris* f. *repanda* may sometimes lack the large, repandly margined leaves of that forma and pass mistakenly for the f. *Burmanniana*. Or, an atypically small-leaved spray of f. *Burmanniana* will sometimes pass, in the absence of an ample suite of associate materials, as var. *arborescens* f. *spatulata*; and so on. Whatever the reason, however, in all such cases the collectors' numbers have been designated here and in the text proper as "p. p." or "pro parte."

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A PRELIMINARY STUDY OF HAWAIIAN
SPECIES OF THE GENUS RAUVOLFIA

ADDITIONS TO THE GENERA SCALESIA
AND HIDALGOA

BY

EARL EDWARD SHERFF

RESEARCH ASSOCIATE, SYSTEMATIC BOTANY

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A PRELIMINARY STUDY OF THE HAWAIIAN
SPECIES OF THE GENUS RAUVOLFIA¹
[PLUM.] L.
(FAMILY APOCYNACEAE)

EARL EDWARD SHERFF

For many years, specimens of *Rauvolfia* collected in the Hawaiian Islands have been indiscriminately referred to *R. sandwicensis* A. DC., a species published by Alphonse DeCandolle (Prodr. 8: 339. 1844) from a Hawaiian plant of unspecified habitat and with all too scanty a description. On careful examination, these specimens are found to represent seven rather easily distinguishable species, six of them new to science. Perhaps the chief obstacle to a taxonomic study of the Hawaiian species has been the inadequacy of DeCandolle's original description of his *R. sandwicensis*, coupled with the comparative inaccessibility of the lone type specimen in the herbarium representing the DeCandolles' *Prodromus*. It was difficult to ascertain just which was the real *R. sandwicensis* of Alphonse DeCandolle, and thus which six other species were actually new. Recently, however, the authorities at the Museum of Natural History in Paris and the *Prodromus* Herbarium in Geneva have cooperated most generously in helping to settle the exact identity of the original Gaudichaud plant used by DeCandolle as his type. At Paris, M.

¹ *Rauvolfia* is the spelling given throughout his text by Plumier (Nov. Pl. Amer. Gen. p. 19, tab. 40. 1708) and reinforced with his Latinized spelling, *Leonardus Rauwolfius*, of Leonhart Rauwolf's name. *Rauvolfia* was accepted by Linnaeus and so appears in his Gen. Pl. ed. 5: 98 (gen. no. 59). 1754 *et op. cit.* ed. 6: 115 (gen. no. 298). 1764 and in his Sp. Pl. ed. 2 (the genus was omitted in ed. 1), p. 303. 1762. Alphonse De Candolle (Prodr. 8: 336. 1844) called *Rauvolfia* an error and spelled the name *Rauvolfia*. In this he has been followed by numerous authors. The spelling *Rauvolfia* must be retained, however, according to our present International Rules of Botanical Nomenclature (Jena. 1935); *cf.* arts. 20 and 70. In the latter article, under "examples of retention of original spelling," comparable examples are given, such as *Valantia* L. (not *Vaillantia*) and *Clutia* L. (not *Cluytia*).

In this connection it may be observed that Woodson (Ann. Missouri Bot. Gard. 17: 10. 1930) has erected the new tribe *Rauvolfieae* (*sic*) under the sub-family *Plumeroideae* of the family *Apocynaceae*. Since the International Rules (Jena. 1935) advise (Recom. 42) that "new epithets should be written in conformity with the original spelling of the words from which they are derived . . . , and since they require the spelling *Rauvolfia* for the generic name, Woodson's spelling is here construed as an "unintentional orthographic error" (art. 70) and altered to *Rauvolfieae*.

Leandri, Vice-Director of the Laboratory of Phanerogamy, instituted a detailed search but found no plant of Gaudichaud's type-collection.¹ At Geneva, Dr. Charles Baehni made a careful examination of DeCandolle's type, a fruiting specimen entirely without flowers, and supplied me with an excellent photograph of it. He accompanied the latter with sketches of the calyces and fruits, also with certain precise measurements drawn from the type. Because of Dr. Baehni's invaluable assistance, it was possible to identify the DeCandolle type positively with several suites of specimens collected in recent years on the Island of Oahu (*Degener* 9794; *Degener* 9801; *Degener* 17197; *Degener* 17651; *Degener* & *Bush* 5625; *Degener* & *Shear* 3250; *Degener* et al. 3710; *Fosberg* & *Duker* 9213; *Topping* & *Bush* 9804) and on the Island of Maui (*Degener* 17596; *Forbes* 475-M; *Forbes* 2280-M, etc.).

Some years ago, Mr. Otto Degener gave special attention to this genus in the Hawaiian Islands when collecting specimens preparatory to writing his *Flora Hawaiana*. Recently he has most generously turned his *Rauvolfia* collections, notes, and drawings over to me in their entirety. With these to supplement the herbarium specimens available elsewhere, the following somewhat tentative or preliminary key and detailed treatments have been produced:

- a. Leaves mostly narrow-oblong to elliptic-ob lanceolate or -ovate.
- b. Principal leaves mostly under 3 cm. broad and tapering or sub-acuminate at each end, corolla under 7 mm. long; pedicels scarcely exserted; native of southern Oahu...5. *R. Forbestii*.
- b. Principal leaves mostly narrow-oblong and under 3 cm. broad, at apex obtuse or obtusish (flowers unknown); native of East Maui.....7. *R. mauiensis*.
- b. Principal leaves broader, tapering or sub acuminate at each end, at times 4 cm. broad, corolla reaching 10-11 mm.; pedicels exserted and obvious; native of southern Kauai. 6. *R. Helleri*.
- a. Leaves mostly broader and obtuse to acute at each end, or in *R. sandwicensis* var. *subacuminata* sub acuminate at distal end, blade seldom or but slightly broadening above middle.
- b. Calyx 5-7 mm. long; native of Oahu and Lanai.
 - 1. *R. Degeneri*.
 - b. Calyx commonly under 3 mm. long.

¹ He did, however, locate an assortment of more recently collected Hawaiian specimens of *Rauvolfia* and very kindly lent them to me for examination.

- c. Inflorescence open, pedicels slender and obvious (about 2 mm. long), leaves acute at both ends; native of Hawaii.
 - 4. *R. remotiflora*.
- c. Inflorescence congested, pedicels stoutish and short or inconspicuous; leaves subacute to obtuse or at apex even rounded.
 - d. Corollas (if fully developed) very slender, up to about 1 cm. long; calyx about 1.5 mm. long; native of Molokai and Lanai. . . . 3. *R. molokaiensis* vars. *typica* and *parvifolia*.
 - d. Corollas (if fully developed) swollen above, shorter; calyx commonly 1.5-3 mm. long or even longer.
 - e. Leaves obtuse to acute at apex; native of Oahu.
 - 2. *R. sandwicensis* var. *typica*.
 - e. Leaves mostly subacuminate at apex; native of Kauai.
 - 2 β . *R. sandwicensis* var. *subacuminata*.

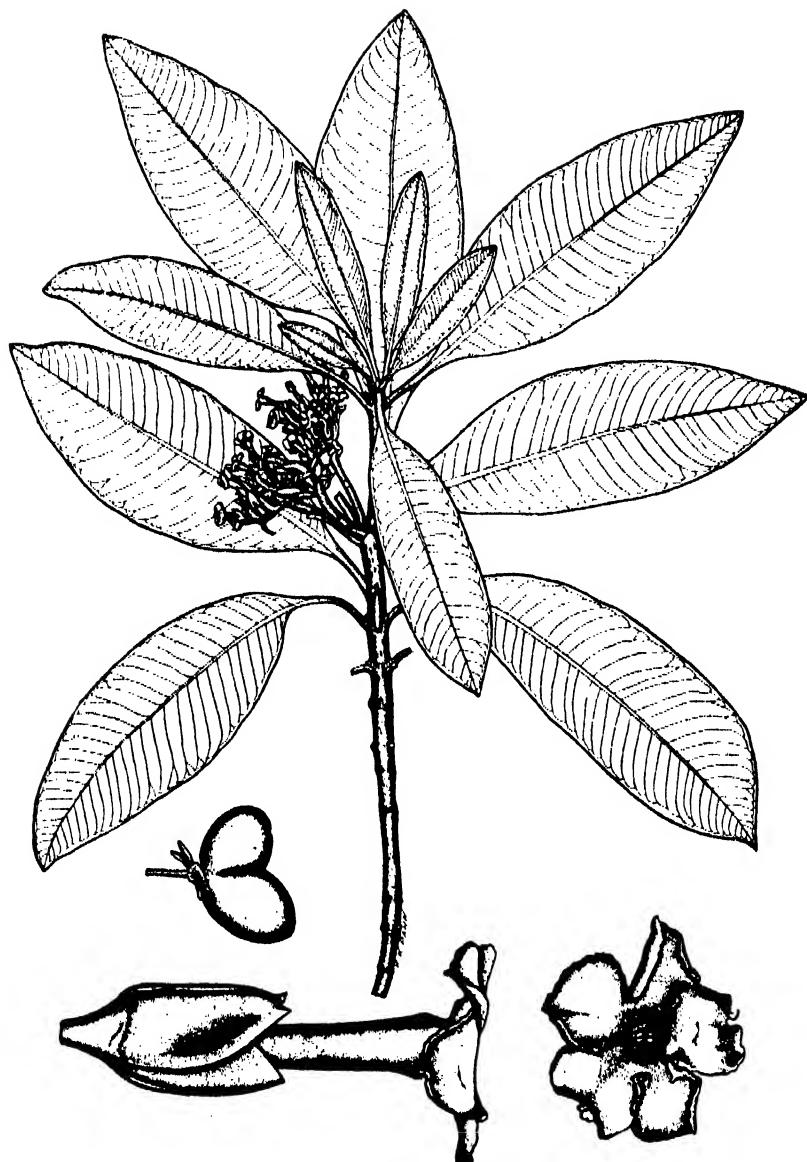
1. *Rauvolfia Degeneri* sp. nov. Plate 1.

Frutex vel arbuscula, glabra, 3-6 m. alta; ramis brevibus, rigidis, albidis, striatis. Folia verticillata, plerumque 5 ad nodum, petiolata; petiolo tenui, 1.5-3 cm. longo, axilla 5-12 glandulos (stipitatos forsitan lineares) subtendente; lamina utrinque obtusa vel acuta vel raro subacuminata, moderate ad late elliptico-oblonga vel elliptico-ovovata, 7.5-13 cm. longa et 2.5-5 cm. lata, pallida, membranacea, venis lateralibus parallelis subobscuris in lineam submarginalem confluentibus. Flores fragrantes (fide Fosbergii), in 3 vel 4 cymis (his umbellate decompositis) congesti, inflorescentia petiolorum subaequante vel etiam superante, primum terminali mox axillari; pedunculo 1-3.5 cm. longo, angulari; pedicellis 0.5-2 mm. longis; bracteis ovatis ad lanceolatis, acutis, plerumque 1.5-3 mm. longis, in axillis glandulos stipitatos subtendentibus. Calyx viridis, glaber, 5-partitus fere usque ad basim, 5-7 mm. longus; sepalis 3-5 mm. latis, imbricatis, obtusis ad abrupte acutis vel acuminatis. Corolla nunc minima vel abortiva, stylo longe exerto; nunc amplior, limbo albo, lobis 2-3 mm. longis et 3-4 mm. latis, marginibus irregularibus basi plus minusve constrictis, circumambitu diverse ovatis ad obovatis obcordatisve, tubo 10 mm. longo et 1-1.5 mm. crasso extus glabro intus (supra medium) sparsim pubescenti apice dilatato, gutture vix constricto, stylo filiformi inclusa corollae tubum aequante, stigmate complanato-prismatico circ. 0.6 mm. longo et annulo angusto piloso subtento.

Shrub or small tree, glabrous, 3-6 meters tall; branches short, stiff, whitish, striate. Leaves verticillate mostly in fives, petiolate, petiole slender and 1.5-3 cm. long, with 5-12 stipitate perhaps linear glands in the axil; blade obtuse to acute or rarely sub acuminate at each end, moderately to broadly elliptic-oblong or -ovate, 7.5-13 cm. long and 2.5-5 cm. wide, pale, thin-chartaceous, the faint parallel lateral veins confluent into a submarginal line. Florets fragrant (according to Fosberg), crowded into 3 or 4 umbellately decompound cymes, these subequal to or even exceeding the petioles, at first terminal but soon axillary (through innovations from tip of branchlet); the common peduncle 1-3.5 cm. long, angular, pedicels 0.5-2 mm. long, the acute, lanceolate to ovate bracts mostly 1.5-3 mm. long and with stipitate glands in their axils. Calyx green, glabrous, 5-parted to near base, 5-7 mm. long, sepals 3-5 mm. wide, imbricated, obtuse to abruptly acute or acuminate. Corolla in many flowers diminutive or abortive, their style long-exserted, in some or many flowers fully developed and then: limb white; its 5 lobes 2-3 mm. long and 3-4 mm. broad, irregular at edges, more or less constricted at base, in outline variously ovate to obovate or obcordate; tube 8-10 mm. long and 1-1.5 mm. thick, glabrous outside and sparsely pubescent inside above middle, dilated for \pm 1.5 mm. below the scarcely constricted throat; style filiform, included, as long as corolla-tube, the flattish-prismatic stigma about 0.6 mm. long and subtended by a narrow hairy ring.

Specimens examined:

Island of Oahu: *Chamisso*, Isl. Oahu (type, Chi.: isotype, Len.); *Erling Christophersen* 3716, alt. 450 meters, ridge between valleys 10 and 11, below Kanehoa, central Lualualei, Waianae Mountains, June 29, 1932 (N.Y.); *Otto Degener* 9798, in moderately dry ravine, Honolulu side of Palikea, Waianae Range, October 23, 1932 (N.Y.); *Degener* 9800, in dry, grassy region, west side of Pohakea Pass, July 30, 1932 (N.Y.); *Degener* 17200, in open forest, middle ridge east of Puu Kanehoa, May 1, 1940 (N.Y.); *Degener* 17748, in forest, short spur just east of Puu Hapapa summit, June 20, 1939 (N.Y.); *Degener*, *K. K. Park*, *Y. Nitta*, & *Will Bush* 9799, gulch north of middle ridge between Puu Kamaohanui and Puu Pane, Waianae Range, June 11, 1932 (N.Y.); *F. R. Fosberg* 13313, shrubby tree 4 meters tall, lactiferous, flowers white with greenish corolla-tube, fragrant, rock ledges on cliff, alt. 200 meters, Kealia trail up cliff, Waianae Mountains, November 8, 1936 (Chi.); *Fosberg* 14118, shrub 4 meters tall, flowers white and fragrant, in moist forest, alt. 400



RAUVOLFIA DEGENERI

From specimen collected on Honolulu side of Waianae Range, near Pohakea Pass,
Island of Oahu; flowering branch $\times 0.42$; flower, both
views, $\times 3.36$; fruit, $\times 0.84$.

meters, Woodlawn, Manoa, Honolulu, June 19, 1937 (Chi.); *Horace Mann, Jr., & William T. Brigham* 113, Oahu (Chi., 2 sheets, one with label giving the definite locality, Konahuanui; Gray, 2 sheets; N.Y.).

Island of Lanai: *Mann & Brigham* (similarly) 113, Lanai (Chi.).

This species is one of which Degener has distributed various specimens determined as *Rauvolfia sandwicensis* A. DC. It is a pleasure to commemorate here his indefatigable zeal in the collection and scientific study of Hawaiian plants by naming this species in his honor.

Besides the above-cited specimens, I have seen two fragments at Gray Herbarium, from the Hawaiian Islands. One was collected by George Barclay, the other by the United States South Pacific Exploring Expedition under Captain Wilkes. Both are instantly recognizable from the large calyces.

2. *Rauvolfia sandwicensis* A. DC. *Prodr.* 8: 339. 1844 and var. *typica* var. nov.

Foliis habituque *R. Degeneri* valde similis, tamen floribus differt: calice plerumque 1.5-3 (raro -4) mm. longo; lobis apice nunc subacutis nunc obtusis vel rotundato-subtruncatis basi interdum late cordato-auriculatis; corolla etiam si plene extensa breviore (tubo 3-4 vel raro 5-6 mm. longo limbo guttureque tumidi-oribus et cunctis 3-4 mm. longis) et stylum includente, si abortiva stylo longe (\pm 7 mm.) exerto multum superata, stigmate circ. 0.4 mm. stylo longe (\pm 7 mm.) exerto multum superata, stigmate circ. 0.4 mm. longo.

Strongly similar in foliage and habit to *R. Degeneri* but differing in its flowers. Calyx commonly 1.5-3 (rarely -4) mm. long; lobes apically now subacute now obtuse or rotundate-subtruncate, basally at times broadly cordate-auriculate. Corolla even when well developed shorter (its tube 3-4 or rarely 5-6 mm. long, limb and throat more swollen and together 3-4 mm. long) and including the style; if abortive much surpassed by the much exserted (\pm 7 mm.) style, stigma about 0.4 mm. long.

Specimens examined:

Oahu: *Otto Degener* 9794, on open, grassy slope, Paumalu Ridge, Koolau Range, October 18, 1931 (N.Y.); *Degener* 9801, in grass- and *Gleichenia*-covered foothills, directly *mauka* [i.e., inland or toward the mountains] of Kawela Bay, Koolau Range, March 30, 1933 (N.Y.); *Degener* 17197, in lower forest, Oio, Paumalu Trail, June 16,

1940 (N.Y.); *Degener* 17651, Oahu, September 14, 1938 (type, N.Y.); *Degener & Will Bush* 5625, Kawaihapai, January 27, 1927 (N.Y.); *Degener & C. L. Shear* 3250, in open rain-forest near Kahuku side, along Pupukea-Kahuku trail, February 15, 1928 (N.Y.); *Degener, Hamilton Rodrigues, & Noel Krauss* 3710, a few small trees on dry, grassy slope, west side of Kahana Valley, February 24, 1929 (N.Y.); *F. R. Fosberg & Katherine Duker* 9213, tree 10 meters tall, in wet forest, alt. 480 meters, Pupukea-Kahuku Trail, Kaunala, Koolau Mountains, February 19, 1933 (Chi.); *ex herb J. F. Rock*, Tantalus, November 30, 1912 (Gray); *D. LeRoy Topping & Will Bush* (*Degener distrib. no.*) 9804, Manakuli, June, 1933 (N.Y.).

West Maui: *Otto Degener* 17596, near stream, Olowalu Valley, August 28, 1939 (N.Y.); *Charles Noyes Forbes* 475-M, Honokahau Drainage Basin, September 25–October 17, 1917 (N.Y.); *Forbes* 2280-M, Olowalu Valley, May 9, 1920 (N.Y.).

28. *Rauvolfia sandwicensis* var. *subacuminata* var. nov.

Folia saepe 5–6 cm. lata, apice subacuminata.

Leaves often 5–6 cm. wide, at apex subacuminate.

Specimens examined: *Otto Degener & Henry Wiebke* 3249, in light woods on mountain, northeast of Kipu, Isl. Kauai, June 17, 1926 (N.Y.; without flowers or fruits); *Jules Remy* 368, Isl. Kauai, 1851–1855 (2 type sheets, Par.: isotype, Gray).

3. *Rauvolfia molokaiensis* sp. nov. and var. *typica* var. nov.

Foliis habituque *R. Degeneri* valde similis; petiolis foliorum usque ad 3.5 cm. longis lamina saepe 10–13 cm. longa et 3.5–5 cm. lata; pedunculo 3–5.5 cm. longo; floribus numerosis; bracteis lanceolato-ovatis, acutis; pedicellis ad anthesin sub 1 mm. longis demum usque ad 4 mm. longis; calice circ. 1.5 mm. longo, sepalis lato-ovatis, basi saepe cordato-auriculatis, marginibus crispis irregularibusque; corolla nunc tenuissima, usque ad circ. 1 cm. longa, limbo circ. 5 mm. lato, stylo inclusa, nunc brevi abortivave stylo longe exerto; fructibus immaturis visis.

Very similar in foliage and habit to *R. Degeneri*. Petioles up to 3.5 cm. long, blade often 10–13 cm. long and 3.5–5 cm. wide. Peduncle 3–5.5 cm. long; flowers numerous; bracts lanceolate-ovate, acute; pedicels under 1 mm. long at anthesis, finally up to 4 mm. long. Calyx about 1.5 mm. long; sepals widely ovate, at base often cordate-auriculate, at margins crisped and irregular. Corolla now very slender, up to about 1 cm. long, its limb about 5 mm. across

and its style included, now short or abortive and with a much exserted style. Immature fruits seen.

Specimens examined: Island of Molokai: *Otto Degener & Kazuto Nitta* 9795, Wailau Valley, August 12, 1928 (Chi.; N.Y.); *Abbé Urbain Faurie* 453, Wailau, June, 1910 (Par.); *Charles Noyes Forbes* 23-Mo, Settlement Trail, June, 1912 (type, N.Y.).

Island of Lanai: *Forbes* 157-L, tree 30 feet tall, dry forests, west end of island, June 9, 1913 (N.Y.); *Mann & Brigham* 336 (Gray); *J. F. Rock* 8033, Mahana, July 24, 1910 (Gray; N.Y.; Par.).

3β. *Rauvolfia molokaiensis* var. *parvifolia* Degener & Sherff var. nov.

Folia minora lamina plerumque sub 10 cm. longa et sub 3 cm. lata.

Leaves smaller, blade commonly under 10 cm. long and under 3 cm. wide.

Specimens examined: *Otto Degener & Henry Wiebke* 3248, about 30 feet tall, hot arid rocky slope, ravine northwest of Puu Makulilili (where precipice makes further descent impossible), Isl. Molokai, May 22, 1928 (type, N.Y.: isotypes, Chi.; N.Y.).

4. *Rauvolfia remotiflora* Degener & Sherff sp. nov.

*Arbor glabra, ramis flavidis, internodiis brevissimis. Folia verticillata, 4 vel 5 ad unicum nodum, pallida, petiolo tenui 2-3 cm. longo; lamina pallida, membranacea, elliptico-oblonga, utrinque acuta, plerumque sub 10 cm. longa et sub 3.5 cm. lata, venis lateralibus parallelis in venam longitudinalem submarginalem confluentibus. Habitu inflorescentiae *R. Degeneri* similis sed multo minus congesta. Pedunculus circ. 2-3 cm. longus. Flores subnumerosi sed distantes. Bracteae ovatae vel late lanceolatae, acutae, margine irregulares, axillis nonnullos glandulos subtendentes. Pedicellus manifestus tenuis, circ. 2 mm. longus. Calyx sub 2 mm. longus, infra medium gamosepalus; sepalis nunc ovatis nunc rotundato-cordatis basi saepe auriculatis, apice nunc acutis nunc rotundis, marginibus eroso-denticulatis. Corolla ad anthesin circ. 9 mm. longa, tubo inferne 1 mm. crasso superne lobos versus abrupte dilatato et dimidio crassiore, limbo expanso circ. 5 mm. lato; stylo inclusu. Fructus nitidus, circ. 2 cm. latus et ± 1.2 cm. altus.*

A glabrous tree, branches yellowish, internodes very short. Leaves whorled, 4 or 5 at a single node, pale, the slender petiole 2-3 cm. long; blade pallid, membranaceous, elliptic-oblong, acute

at both ends, commonly under 10 cm. long and under 3.5 cm. wide, the parallel lateral veins confluent into a lengthwise submarginal vein. Similar in habit of inflorescence to *R. Degeneri* but florets much less crowded. Peduncle about 2-3 cm. long. Flowers subnumerous but standing apart. Bracts ovate or widely lanceolate, acute, irregular at the margin, the axils subtending some glands. Pedicel conspicuous, slender, about 2 mm. long. Calyx under 2 mm. long, gamosepalous below its middle; sepals now ovate now rounded-cordate, at base often auriculate, at apex now acute now rounded, the margins erose-denticulate. Corolla about 9 mm. long at anthesis, its tube 1 mm. thick below but abruptly dilated above toward the lobes and a half thicker, the expanded limb about 5 mm. across; style included. Fruit shining, about 2 cm. wide and ± 1.2 cm. tall.

Specimens examined: *L. W. Bryan* (distrib. *Otto Degener* no.) 9803, trees forming "quite a grove" *makai*¹ of Waiohinu in Kau, Isl. Hawaii, March, 1933 (N.Y.); *Otto Degener* 5624, in tree-covered, dry *aa kipuka*,² half-way between Kaalualu and Waiohinu, Isl. Hawaii, September 7, 1929 (type, N.Y.: isotype, N.Y.).

5. *Rauvolfia Forbesii* sp. nov.

Glabra, sine dubio arborescens. Folia verticillata, petiolo angusto 1.5-3 cm. longo, cum multis glandulis linearibus stipitatisque in axillis; lamina anguste elliptico-oblunga vel -ob lanceolata, utrinque plus minusve acuminata, 6-11 cm. longa et 2-3 cm. lata, venis later-alibus in lineam submarginalem confluentibus. Flores numerosissimi, minimi, in 3 vel 4 cymis (his umbellate decompositis, tenuiiter pedunculatis pedunculo 1-3.4 cm. longo) dispositi, bracteis ovatis vel lanceolato-deltoideis apice plerumque acribus vel etiam subulatis, 1.5-2.5 mm. longis. Calyx sub 2 mm. longus, sepalis basim versus connatis, margine irregularibus, apice obtusis acutis acuminatis, lamina saepe cordata et basaliter obtuso-auriculata. Corolla sub 7 mm. longa et sub 1 mm. crassa; stylo inclusa vel interdum corolla abortiva longe exserta. Fructus ignotus.

Doubtless arborescent. Leaves whorled; petiole narrow, 1.5-3 cm. long, many linear, stipitate glands in the axil; blade narrowly elliptic-oblanceolata, at both ends more or less acuminate, 6-11 cm. long and 2-3 cm. wide, the lateral veins confluent into a submarginal line. Florets very numerous, very small, disposed in

¹ At or towards the sea from.

² *Aa*, a certain rough, broken form of lava; *kipuka*, a fertile, open place in a forest or on a lava-flow.

3 or 4 cymes (these umbellately decompound, slenderly pedunculate with a peduncle 1-3.4 cm. long) at end of a branchlet; bracts ovate or lanceolate-deltoid, at apex commonly sharp or even subulate, 1.5-2.5 mm. long. Calyx under 2 mm. long; sepals connate toward base, irregular at margin, obtuse or acute or acuminate at apex, often cordate and basally obtuse-auriculate. Corolla under 7 mm. long and under 1 mm. thick, lobes about 1-1.2 mm. long; style included or at times (from an abortive corolla) long-exserted. Fruit unknown.

Specimens examined: *Charles Noyes Forbes* 1429-O, west side of Nuuanu Valley, Isl. Oahu, January 7, 1910 (type, Chi.: isotype, N.Y.).

The tiny florets are especially numerous, a single peduncle at times supporting 50-100 or more. The leaves are distinctly narrower and sharper at both ends than in *R. sandwicensis* and *R. Degeneri*. Hillebrand (Fl. Haw. Isls. 295. 1888) cited "the west side of Nuuanu" for his first locality for *R. sandwicensis* DC. and doubtless molded his detailed description of that species partly on the present Nuuanu species.¹

6. *Rauvolfia Helleri* sp. nov.

Arbor parva, glabra, cortice laevi flavidoque, ramis rigidis patentibusque. Habitu *R. Forbesii* similis. Folia verticillata, petiolata petiolis angustis 1.5-3 cm. longis; lamina elliptico-oblonga vel anguste oblongo-ovata, utrinque acuminata vel acuta, 7-11 cm. longa et 2-4 cm. lata. Inflorescentia primum terminalis demum lateralis, pedunculis angulatis tenuibus 1-3 vel etiam -6 cm. longis, multifloris. Bracteae ovato-triangulatae vel lanceolatae sed apice plerumque acriter et plus minusve abrupte acuminatae, plerumque 1-2 mm. longae. Calyx 2-3 mm. longus, manifeste et saepe tenuiter pedicellatus pedicello 1.5-2 mm. longo, sepalis ovatis vel ovato-cordatis et basi interdum subauriculatis, apice obtusis vel saepe abrupte apiculatis. Corolla nunc absens vel abortiva (et stylus manifeste exsertus stigmate tenui circ. 0.4 mm. longo) nunc saepissime praesens, tubo sub 8 mm. longo et 1.7 mm. crasso, lobis ovatis vel ovato-cordatis sub 1.6 mm. longis. Fructus ignotus.

¹ Thus, cf. his "leaves . . . acuminate at both ends," a description fitting well *R. Forbesii*, whereas *R. sandwicensis* DC. was described as having *acute* leaves. Indeed, from Dr. Baehni's superb photograph (now before me) of the type of *R. sandwicensis*, the leaves are seen to have blades acute or subacute at their base but subobtuse at their apex.

Small tree, glabrous, bark smooth and yellowish, branches rigid and spreading. Similar in habit to *R. Forbesii*. Leaves verticillate, petiolate, the narrow petioles 1.5–3 cm. long; blade elliptic-oblong or narrowly oblong-ovate, acuminate or acute at both ends, 7–11 cm. long and 2–4 cm. wide. Inflorescence at first terminal finally lateral; peduncles angulate, slender, 1–3 or even to 6 cm. long, many-flowered. Bracts ovate-triangular or lanceolate but at apex as a rule sharply and more or less abruptly acuminate, commonly 1–2 mm. long. Calyx 2–3 mm. long, manifestly and often slenderly pedicellate with a pedicel 1.5–2 mm. long, sepals ovate or ovate-cordate and at base sometimes subauriculate, at apex obtuse or often abruptly apiculate. Corolla now lacking or abortive (and style manifestly exserted, its stigma slender and about 0.4 mm. long) now very often well developed, its tube under 8 mm. long and 1.7 mm. thick, its lobes ovate or ovate-cordate and under 1.6 mm. long. Fruit unknown.

Specimens examined: *Amos Arthur Heller* 2582, on the ridge west of the Hanapepe River, Isl. Kauai, July 17, 1895 (type, N.Y.: isotypes, Chi.; Gray; N.Y.; Par.).

7. *Rauvolfia mauiensis* sp. nov.

Frutex forsitan rarius subarborescens, suco lacteo, internodiis saepissime 3–9 mm. longis. Folia verticillata, nodum quodque 5, petiolata petiolis tenuibus 1.5–3 cm. longis, axilla quaque 5–12 stipitatos glandulos subtendente; laminis elliptico-oblongis, apice saepius subobtusis, basi acutis vel acuminatis, membranaceis, glabris, 6–8 (rarius –10) cm. longis et 1.5–3 cm. latis. Flores (ex inflorescentibus veteribus sine dubio subnumerosi) non visi. Inflorescentia 4-partita, primum terminalis demum lateralis, 4 pedunculis circ. 1.5–3 cm. longis, glabris, pedicellis demum 3–4 mm. longis. Fructus demum \pm 1.8 cm. lati et \pm 1.3 cm. alti, glabri, in herbario nigri.

Shrub or perhaps rather rarely subarborescent; sap milky, internodes most often 3–9 mm. long. Leaves whorled, 5 to each node, petiolate (petioles slender, 1.5–3 cm. long), each axil subtending 5–12 stipitate glands; blades elliptic-oblong, at apex more often subobtuse, at base acute or acuminate, membranaceous, glabrous, 6–8 (more rarely –10) cm. long and 1.5–3 cm. wide. Florets (without doubt numerous as seen from the old inflorescences) not observed. Inflorescence 4-parted, at first terminal but finally lateral, the 4 peduncles about 1.5–3 cm. long, glabrous, the pedicels finally 3–4 mm. long. Fruits finally \pm 1.8 cm. wide and \pm 1.3 cm. tall, glabrous, in the herbarium black.

Specimens examined: *Joseph F. Rock* 8660, lava fields along the government road, Kahikinui, East Maui, November, 1910 (type, Gray: isotypes, N.Y.; Par.).

At once distinguished from the other Hawaiian species of *Rauvolfia* by its characteristic elliptic-oblong leaf-blades. This is the species pictured by Rock (Indigenous Trees of the Hawaiian Islands 408, pl. 166. 1913, excluding the misapplied name *R. sandwicensis* A. DC.). Rock speaks of plants "growing on the rough *aa* lava flows on the leeward sides of the Hawaiian Islands, as on Auahi, Maui, on the southern slopes of Mt. Haleakala," where, he says, "it is a more or less stunted shrub." It may be noted here that the "Auahi" (Auwahi) mentioned by him in his Indigenous Trees is in the southwestern part of the District of Kahikinui referred to by him on the type label of *R. mauiensis*.

ADDITIONS TO THE GENERA SCALESIA ARN.
AND HIDALGOA LLAVE AND LEX.
(FAMILY COMPOSITAE)

EARL EDWARD SHERFF

Scalesia Menziesii Degener & Sherff comb. nov. *Zemisne Menziesii* Deg. & Sherff ex Sherff, Amer. Journ. Bot. 22: 708, pl. 1. 1935.

Stated on type sheet to have been collected by Menzies, on the Vancouver Voyage, in the Hawaiian Islands. Whether this was true I cannot say, but the type is seen to be too close to the Galapagean *Scalesia* Arn. to permit retaining for it the monotypic genus *Zemisne*.

It is not impossible that the Menzies plant could have come from the Hawaiian Islands while the other species of *Scalesia* were endemic in the Galapagos Islands. The affinity, slight to be sure, between the floras of these two archipelagoes has already been noted elsewhere (*vide* Sherff, Amer. Journ. Bot. 32: 207. 1945). Still we have the possibility that, since the Vancouver Expedition visited both island groups, a confusion occurred as to habitat data,¹ and that Menzies really collected the plant on one of the Galapagos Islands.

The achenes on the Menzies plant were submature and originally construed as obcompressed. They should be reexamined to see if they are not better described as laterally compressed (as suspected by Dr. S. F. Blake some years ago, *in litt.*).² The leaves closely resemble those of *Scalesia aspera* Anderss. but are denser- and longer-hispid, and the branchlets are densely and conspicuously hispid (as seen in a type photograph of *S. Menziesii* before me, Sherff no. 2527),

¹ If *S. Menziesii* is to be sought for in the Galapagos group, it might be well to search especially on the northwest coast of Albemarle Island, since we read (Vancouver, Voy. 3: 881. 1798) that Menzies accompanied a Mr. Whidbey on a reconnoitering trip to that locality immediately after breakfast one morning early in February, 1798. They had been dispatched from their ship with orders to land somewhere to the southward of the western extremity of the land then in sight, which had been named Cape Berkeley, a small projection of land at the northwest tip of Albemarle Island. They returned "about five in the afternoon."

² Unfortunately, the Menzies type in some unaccountable way has become misplaced at the British Museum of Natural History, according to word kindly sent me by the Keeper of Botany at that institution, Dr. John Ramsbottom, and cannot be found at present.

not merely "scabrous with short scattered upwardly appressed hairs" (as stated by Howell, Proc. Calif. Acad. Sci. 4th ser., 22: 248. 1941 and as seen in *Stewart* 664 now before me). Moreover, *S. Menziesii* has its involucral bracts uni- or subbiseriate, while *S. aspera* has them in 2 to 4 series.¹

***Hidalgoa pentamera* sp. nov.**

Habitus *Hidalgoae ternatae* valde similis sed aliter satis diversa. Petioli tenues usque ad ± 1 dm. longi; lamina membranaceissima plus minusve perfecte palmatimque 5-partita; stipulis deficientibus; foliolis rhomboideo-ovatis inferne cuneato-angustatis sed vix breviterve petiolulatis, grosse crenatimque pauci-serratis (dentibus mucronatis), apice obtusis rarius subacute, punctulatis, non nisi secundum venas marginesque puberulis mediano usque ad 6.5 cm. longo et ad 4.5 cm. lato, aliis minoribus; axillis plerumque gemmam minimam abortivam tenuem subtendentibus. Capitula radiata, pansa ad anthesin tantum circ. 2-2.8 cm. lata et ± 1.2 cm. alta; pedunculo tenui usque ad ± 1.5 dm. longo. Involucrum moderate pubescens; bracteis exterioribus 3 vel 4, patentibus reflexisve, subulato-linearibus, apice acribus, 4-5 mm. longis; interioribus late ovato-oblongis, ± 8 mm. longis et 4-5 mm. latis, erectis. Flores ligulati circ. 5; ligula (sicca) flava, oblonga vel latiore, apice bidentata, sub 1 cm. longa, stylo glabratu profunde bifurcato. Achaenia atra circumambitu elliptico-oblonga, perspicue subtiliterque longitudinali-strigosa, dorso longitudinaliter secundum medium valde turgida, ventre plana, corpore circ. 8 mm. longa et 4-5 mm. lata, apice saepius bicornuta cornibus robustis acribus plus minusve valde inflexis usque ad 3.5 mm. longis, demum paleas ovato-oblongas facile superantia. Flores disci flavi, tenues, limbo 5-dentati dentibus erectis; stylo flavo, hispidulo, simplici, saepe longe exerto.

Strongly similar in habit to *Hidalgoa ternata* but otherwise sufficiently different. Petioles slender, up to ± 1 dm. long; stipules lacking; blade very thin-membranaceous, more or less perfectly and palmately 5-parted; leaflets rhomboid-ovate, cuneate-narrowed below but scarcely or shortly petiolulate, coarsely and crenately few-serrate (teeth mucronate), at apex obtuse or more rarely subacute, punctulate, not puberulous unless along veins and edges, the median one up to 6.5 cm. long and to 4.5 cm. wide, the others smaller; axils

¹ For the lending of valuable herbarium materials of *Scalesia*, I am greatly indebted to Dr. H. K. Svenson, until recently of the Brooklyn Botanic Garden, to Miss Alice Eastwood, Curator, and to Mr. John Thomas Howell, Assistant Curator, of the Department of Botany, California Academy of Sciences.

commonly subtending a very small abortive slender bud. Heads radiate, at anthesis only about 2-2.8 cm. wide and \pm 1.2 cm. tall; peduncle slender, up to \pm 1.5 dm. long. Involucre moderately pubescent; outer bracts 3 or 4, spreading or reflexed, subulate-linear, at apex sharp, 4-5 mm. long; inner ones broadly ovate-oblong, \pm 8 mm. long and 4-5 mm. wide, erect. Ligulate florets about 5; ligule (in dry state) yellow, oblong or broader, at apex bidentate, under 1 cm. long, the glabrate style deeply 2-branched; achenes black, in outline elliptic-oblong, conspicuously and delicately lengthwise-strigose, much swollen lengthwise along middle of dorsal surface, flat on ventral surface; body about 8 mm. long and 4-5 mm. wide, at apex more often 2-horned (horns robust, sharp, more or less strongly inflexed, up to 3.5 mm. long, at last easily surpassing the ovate-oblong paleae). Disk-florets yellow, slender, corolla-limb erectly 5-dentate; style yellow, hispidulous, simple, often long-exserted.

Specimens examined: *C. A. Purpus* 5897, Misantha, State of Veracruz, Mexico, August, 1912 (type, Chi.: isotype, N.Y.); *Sessé, Mociño, Castillo, & Maldonado* 3961, Mexico, 1787-1804 (Chi.).

At least ten good leaves still remain on the old *Sessé et al.* specimen, collected perhaps more than a century and a half ago. All have blades definitely 5-parted, in fact almost perfectly palmate. The original label bears the inscription, *Silphium pentaphyllum*. This name appears lacking in the published works of *Sessé & Mociño*, but indicates nevertheless that they had been impressed with the uniqueness of the foliage.¹

Hidalgoa Steyermarkii sp. nov.

Habitu *Hidalgoae ternatae* similis sed foliis capitulisque minor. Caulis subtilis, acerrime sulcatus, prope nodos plus minusve hispidus setis pluriloculatis, internodiis brevibus sub 1 dm. longis. Folia estipulata, glabrata, petiolo tenui 2-4 cm. longo basi forsitan rarius

¹ They were familiar with the commoner *H. ternata*, having tripartite leaves, exemplified by two sheets of their material (Chi.) now before me. One is their no. 2918, labeled by them (on the duplicate at Madrid), "Coreopsis triphylla." The other is their no. 8963, labeled by them (on the duplicate at Madrid), "Sylphium trifoliatum." Thus their faith in the reliability of the leaf-character is indicated by their use of the names *triphylla* and *trifoliatum*, versus *pentaphyllum*. Their faith seems indeed confirmed by the fact that the excellent specimens collected by Purpus more than a century later were likewise consistently 5-partite-leaved.

We may note here an additional name used by *Sessé & Mociño* (Fl. Mex. edit. 2, 195. 1894). This was their *Silphium ternatum* for a plant from the mountains of Tuxtla, in southern Mexico. I have not seen an authentic specimen, hence have omitted this published name from my synonymy.

torto; lamina ternata, foliolis petiolulatis, ovatis vel subrhomboideis, fere eciliatis, tantum 1-4 cm. longis et circ. 1-2.8 cm. latis, parce membranaceis, acriter serratis dentibus saepius 1-4 pro utroque latere. Capitula solitaria ad pedunculi tenuissimi 4-7 cm. longi apicem disposita, radiata, pansa ad anthesin \pm 4 cm. lata et \pm 1 cm. alta. Involucrum glabratum, bracteis exterioribus circ. 4 vel 5, lineari-lanceolatis vel ovato-deltoides, apice acutis vel subacutis, circ. 4-5 mm. longis, demum interdum reflexis; interioribus oblongis, erectis, usque ad 7.5 mm. longis. Flores ligulati \pm 5, ligula aurantiaca lineari-oblonga usque ad 1.8 cm. longa apice acriter 2-4-dentata dentibus fimbriatulo-ciliatis; stylo glabratu profunde 2-ramoso. Flores tubulosi aurantiaci, corollae limbo 5-dentati, extus sparsissime hispiduli, stylo dense hispidulo saepissime simplici. Achaenia matura non visa.

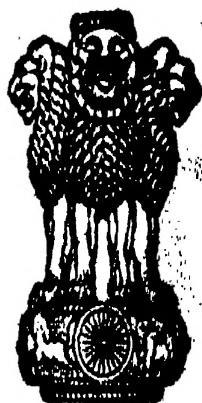
Similar in habit to *Hidalgoa ternata* but with smaller leaves and heads. Stem slender, very sharply sulcate, more or less hispid near nodes with several-celled hairs, internodes short and under 1 dm. long. Leaves estipulate, glabrate, petiole slender and 2-4 cm. long, perhaps rather rarely coiled at base; blade ternate; leaflets petiolulate, ovate or subrhomboid, almost eciliate, only 1-4 cm. long and about 1-2.8 cm. wide, hardly membranaceous, sharply serrate with teeth more often 1-4 to each edge. Heads solitary at end of a very slender peduncle (this 4-7 cm. long), radiate, \pm 4 cm. wide at anthesis and \pm 1 cm. tall. Involucre glabrate, exterior bracts about 4 or 5, linear-lanceolate or ovate-deltoid, at apex acute or subacute, about 4-5 mm. long, sometimes finally reflexed; interior bracts oblong, erect, up to 7.5 mm. long. Ligulate florets \pm 5; ligule orange, linear-oblong, up to 1.8 cm. long, at apex sharply 2-4-dentate with fimbriatulous-ciliate teeth; style glabrate, deeply 2-branched. Tubular florets orange, 5-toothed at limb of corolla, outwardly very sparse-hispidulous, style densely hispidulous and very commonly simple. Mature achenes not seen.

Specimens examined: Julian A. Steyermark 48814, rays and disk orange, around lake southeast of Maxbal, about 17 miles north of Barillas, alt. 1,500 meters, Sierra de los Cuchumatanes, Dept. Huehuetenango, Guatemala, July 15-16, 1942 (type, Chi.).

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